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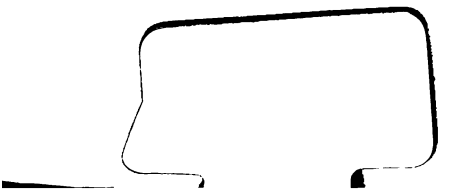


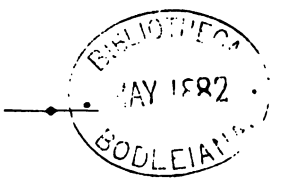
THE

SIMPLE AILMENTS OF HORSES

THEIR NATURE AND TREATMENT

By W. F.

Late Principal and Lecturer on Veterinary Surgery, Edinburgh Veterinary College; Author of "Lessons in Horse Judging," "Lectures on Soundness in Horses," etc. etc.



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184. g. 271.

PREFACE.

THE author has drawn, for the most part, upon his own experience in writing this little book. It is intended for horse-owners in general, and contains hardly a dozen technical terms, and not even these without a full explanation.

No one would regret more than the author if the work either led to or encouraged quackery; but a simple statement of plain facts, even when accompanied by prescriptions in English (so much the dread of the weaker members of the medical and veterinary medical professions), is far less likely to do so than utter ignorance of the importance of the signs and symptoms of disease.

The works of Williams and Fleming have been largely consulted throughout, and those of numerous

medical authors also; and no pains have been spared in bringing the information down to the present time.

Besides simple ailments, some very grave ailments have been treated of. The author's excuse for this, in a little work on slight ailments, is that a few grave disorders make such rapid headway that, long before medical aid can be got, although such aid be not far to seek, the case takes an irremediable turn for want of prompt treatment to arrest it in its early stages—colic, for instance.

The difficulties of parturition have been explained, as this phenomenon is constantly requiring prompt assistance at the hands of amateurs while experienced skill is being sought.

Those who wish to make full use of the book, ought to look carefully over it and take the bearings of its subjects, at least, in order that a hasty reference in case of need may be made. There are those who may find it to their advantage to study the work thoroughly—farm pupils, for instance, who have to become acquainted with the rudiments of veterinary

science. To such the author would say, master the remarks and train of reasoning in the Introduction—fever and inflammation especially; also what is said under the heads "Parturition" and "Bowel Diseases," because these diseases and phenomena will be encountered in five-sixths or more of the cases which the amateur will ever require to treat.

W. F.

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THE

SIMPLE AILMENTS OF HORSES.

INTRODUCTION.

FEVER.

WHEN a medium-sized horse, such as a hunter, is healthy and standing quietly in his stall, his mouth and skin are cool, he breathes quietly and regularly about nine times per minute, whilst his pulse beats about four times as quickly; his tongue is not furred, but moist and clean; he has no intense thirst, but drinks plain water with relish, eats well, passes "water" regularly, neither scanty nor high in colour, &c.

If, however, his system be irritated by *any* efficient irritant whatever, he becomes feverish; no matter whether the irritant to the system be an inflamed lung, or bowel, or leg, or even inflamed gums during teething.

We then have the pulse and breathing accelerated: the temperature of the blood raised: *the secretions locked up* (as seen by the dry skin and mouth, the scanty urine, and constipated bowels): great thirst, loss of appetite, dulness, &c.

Exertion, fright, and emotions will alter the rate of the breathing and pulse, so that, *per se*, these cannot be relied on as symptoms; but *no condition whatever except disease* will raise the temperature of the body. A man, or a horse, in health has a temperature of about 100° Fahr., and maintains this temperature steadily in the arctic regions, on crossing the line, or even in an oven heated to 300°. Nothing will alter it save disease; hence *the clinical thermometer should be in every household and in every stable throughout the land.* The

clinical thermometer tells in three minutes, for a certainty, whether a warm-blooded animal is fevered or not. Of course the extremities of an animal vary much: our hands, or a horse's or sheep's legs, may be as low in temperature as 50°; but all the time the temperature of our or their bodies taken at

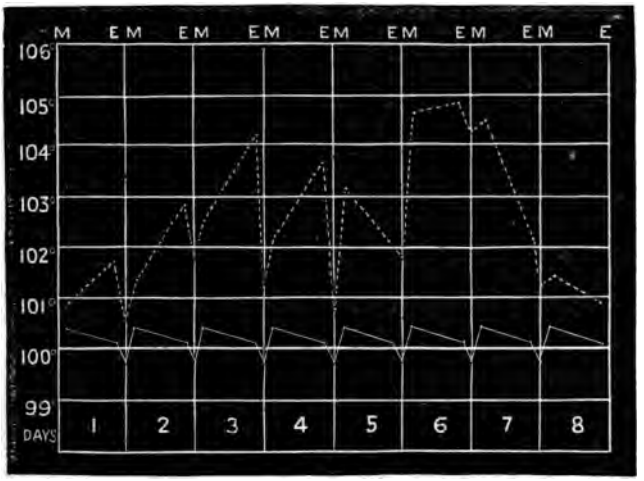


CHART OF TEMPERATURE.

mouth, or better still at the rectum in the case of animals, is 100° Fahr.

The annexed engraving will show two waves—a health wave, and a fever wave. By referring to the chart we see that, in taking a single observation, if we find the temperature anywhere between 98·5 (that is 98½) and 101° the animal may be looked upon as healthy. If, on the other hand, the temperature be found to be above 101° we are in the presence of disease, and the higher the more fever. In certain very rare conditions of the nervous system this temperature may become 124°, but in ordinary disease life hangs on a thread in man or horse, if his temperature exceeds

105°. Therefore, the disease range is for the most part between 101° and 105°.

Steadiness in rhythm is characteristic of health, whilst the rhythm of disease is most irregular. This will also be seen on reference to the chart. In health the temperature is so far varying that a rhythm is formed; the highest part of the graphic rhythm or the highest temperature is about eight or nine o'clock in the forenoon, and the lowest about two to three o'clock during the night or very early morning.

In fever, especially in slight fevers, this is reversed; we then find the temperature lowest in the forenoon, and a distinct feverish rise in the evening.

It is always well during repeated observations either in health or disease to choose certain hours. It is usually most

CLINICAL THERMOMETER.

convenient to take the temperature at nine o'clock in the forenoon and at seven o'clock in the evening.

How to take an observation.—*First set the index* low enough by shaking it down to 97°. We do this by laying the thermometer in the palm of the hand and gently closing upon it so as to grasp the mercury bulb with our thumb and forefinger, then raising the hand and swinging it down, as if caning a naughty boy in front of us. Never shake the index down by hitting one hand upon the other, as this splits the index. Then we insert the thermometer, mercury end foremost, into the rectum for three or four inches, and retain it there from three to ten minutes. Caution:—If enemas have been used, we must not use the rectum for this purpose or the reading may be false; the rectum may be heated or cooled by our enema above or below the real temperature. The mouth is an excellent place, between the cheek and molars, taking care to keep the lips well closed and the instrument from getting

crushed between the teeth. The outer surface of the horse will not do, on account of the hairy covering. In human beings the thermometer is either placed in the axilla (arm-pit), or the closed mouth, and *exactly* the same phenomena as in the horse, &c., occur, and *the same* remarks apply. In the axilla the temperature is 98·5 in health, but in the mouth or rectum (the sheltered places of the trunk) it is 100°, as in the horse.

After withdrawing the instrument the end of the index furthest from the mercury bulb must be noted, and the figure exactly opposite to this read; then, by a dot with a pen or pencil—if we are keeping a chart—we record the height of the reading in the corresponding part of the chart; then we connect this dot with the last dot before this by a straight line.

The above remarks will be still more appreciated as the student becomes acquainted with the universality of fever in his own and his family's persons, and in the bodies of his pets and animals about him.

Definition of Fever.—Fever is a morbid condition of the whole system, in which the temperature of the blood is raised above the normal standard. (Dr. Aitken, "The Science and Practice of Medicine.")

Symptoms.—An irritant may lie dormant, to all appearance, within the system; then it causes—1. The *onset* of the fever, indicated by shivering and increase of temperature. 2. The *accession* or continued fever heat, with wasting of the tissues, and consequent loss of weight, and deranges the functions of the various organs of the body. 3. The *decline* or cooling down to a state of convalescence.

Therefore the symptoms of fever are, at first, shivering, hot and dry skin, hot and dry mouth, great thirst, loss of appetite, dulness, and rise in temperature of the system as indicated by the thermometer. As the fever continues, the increased temperature is rendered evident by the thermometer, the thirst and lost appetite continue, the body wastes, and the urine is

scanty and high in colour, in spite of the large quantities of water taken.

Treatment of Fever.

First of all ascertain the nature of the fever, and then refer to the experience of others so as to ascertain whether the fever is usually fatal, or in what percentage it is fatal; because in the case of a simple fever—which always, or nearly always, leaves the body of its own accord, or with very simple applications, such as the fever from teething—our cares and anxieties, and our remedies also, will be very different to those in the case of the fever of strangles, whilst our fears and remedies will be less and milder in strangles, again, than in acute rheumatism, acute glanders, or charbon.

Generally stated, the treatment of all fever cases takes the following form:—

(1) **To reduce excessive heat.**—The horse cannot live long if the temperature is above 105°, because, for one thing, heat above 105°, or at most 106°, paralyses the heart.

a. **When the skin is dry and burning.**—We give remedies *to depress the circulation* (bleeding, aconite, antimony tartrate, etc.).

b. **When the skin is moist or perspiring.**—We apply remedies which will *reduce heat production.* Nothing is so good for this as cold water. We pour first water of blood-heat all over the horse from large roses of watering cans, gradually lowering the temperature of the water to 60°. (The temperature of the water must be ascertained by a proper thermometer, not by either our clinical thermometer, which might be spoilt, or by our hands.) The horse is to be quickly stripped and this douching quickly conducted, so that not more than twenty minutes is taken up from beginning to end. The lowering of the temperature of the water from 100° to 60° must he rapid, so that five-sixths or so of the time is employed in pouring water at 60° or lower over the horse.

Scrapers are to be instantly used, and large, hot, dry flannels applied to dry the skin quickly, and then well-warmed, dry, woollen rugs and bandages put on. A great sense of comfort follows, and this is the time when milk food, etc., is relished. The temperature of the body is to be watched with a thermometer after this cold douching, and the same process re-applied when the temperature has got to the height it was before. A thorough cold douche may remove the high temperature once for all, or for a time varying from two to eight hours. Usually the douche will be needed three times in twenty-four hours; but during even the longest and most severe fevers the temperature will seldom attempt to rise above 105° more than a couple of days or so.

Note.—If cold douching has been continued a little too long, and the pulse is feeble and the lips are blue, a glass of hot brandy and water as a drench will be required. Whilst the douching is being conducted, some one should be told off to prepare a few pints of iced milk or iced milk and egg, to be taken by the horse immediately after the douche, which he will drink with zest.

(2) **To keep open the great emunctories of the body.**—The bowels, being the chief of the four, must receive our first attention, also our constant attention throughout. A well selected cathartic should be chosen, and when the bowels have been freely opened *simple salines* should be constantly given, such as solution of acetate of ammonia, citrate of potash, nitre-whey (prepared by boiling an ounce of powdered nitre in half a gallon of milk and straining). Bran, hay, or barley tea, or water with lemon-juice (*see* NURSING, at the end of the volume) are all useful as drinks; all to be given cold, or even iced.

(3) **To support the nervous and circulatory systems.**—These systems are apt to fail during a fever, and therefore we must give highly nourishing nutriment in a liquid form,

along with such stimulants as brandy, wine, carbonate of ammonia, strong coffee, etc., the moment the pulse becomes weak and the general powers fail, no matter whether the temperature be high or low. Liquid food, such as egg and milk, beef-tea, etc., etc., must be taken (voluntarily or by the drench-bottle) every two hours, along with suitable stimulants day and night if at all necessary. We must remember that in fevers there is no powerful demon occupying the citadel to be starved out, but rather a poor, weak frame, overwhelmed by the heat and contamination of its own juices, which requires the heat abating, the contaminated juices expelling, and its system well supporting.

(4) **To relieve distressing symptoms.** — Pain, sleeplessness, tympanitis, are all to be pounced upon at once during a fever and rectified, as the weight they throw into the wrong scale will often exhaust the last remaining sparks of life.

(5) **Hygienic management.**—Under the head of NURSING SICK HORSES, at the end of the volume, this is fully treated of.

(6) **Complications must be watched for.**—It is seldom that a severe fever runs its course without complications. It may be more intelligible to the reader, if an amateur, to remind him of the dropsy, the ear discharge, and deafness which sometimes accompany or follow scarletina, the bed-sores which occur during any long fever, etc. The clinical thermometer should be used at least twice a day *throughout* every fever, and then we have the earliest warning of any complication arising by a sudden rise of temperature, at a time, it may be, long past the height of the fever. Pneumonia, bronchitis, etc., are the most common complications; so that besides the rise of temperature, the breathing also becomes embarrassed.

(7) **Convalescence** is a trying ordeal, and is fully treated under NURSING.

INFLAMMATION.

Every part of the body, almost, is nourished and sustained by minute blood-vessels which carry the blood (containing every ingredient necessary to the life and health of the part) to every particle of it, also with other vessels which carry away the older or worn out particles of the part. The vessels carrying on this important work are too small to be seen by the unaided eye, and their control is effected by nerves even smaller than themselves. The nerves control the minute arteries thus: first, they cause the artery to dilate, and thus allow large volumes of blood to rush through them—a phenomenon so clearly seen in the *blush* of the maiden's cheek; second, the nerves contract the arteries so that for the moment they are practically closed, and barely allow the thinnest stream of blood to pass along, as seen in the sudden pallor of the face in anger. The nerves act towards the supply of blood to a part exactly like the governor balls to a steam-engine, and beautifully regulate the supply of blood to the needs of the part. Should any violence be offered to a part thus smoothly working without pain, without extra warmth, without extra colour, or size, the entire series of phenomena is altered, and the part becomes painful, hot, unduly red and swollen, and is said to be inflamed.

In place of the harmony above described, we now have:—

(1) Active congestion. The arteries of the part are dilated, and allow unnaturally large volumes of blood to course through them.

(2) In the very *centre* of the disturbance the blood stream soon becomes slower, then slower still, whilst around the periphery of the part the "active congestion" still goes on.

(3) The blood becomes stagnant at the centre, and the vessels choked and blocked.

(4) The liquid portions of the blood, etc., filter through the sides of the vessels into the surrounding tissue.

The signs produced by these various stages of the process are easily accounted for.

The active congestion makes the part feel warmer than natural when we feel it with our hands. No particular sign can be appreciated during the second stage, but when the third stage is reached we have hardness in the centre, and an impressionable periphery; whilst the fourth stage gives rise to swelling of the part, which pressure would fail to disperse, even if the pain permitted of the pressure being applied. We therefore have the following

Local Signs of Inflammation.

(1) Pain; (2) Heat; (3) Redness; (4) Swelling; (5) Interference with function.

Pain.—This varies much in its nature and intensity, according to the tissue affected.

Heat.—The heat of an inflamed part is greater than in health, through the rapid chemical changes which are taking place in the inflamed tissue.

Redness.—In the domestic animals this sign is less often seen on account of the hairy covering; but if we like to shave off the hair the sign is as well seen as in ourselves. It of course arises from the greatly increased amount of blood in the part.

Swelling.—This is an early sign, produced to a slight degree by the increased amount of blood in the part, afterwards by the exudation of the fluid part of the blood through the coats of the vessels into the tissue. The swelling varies much in amount, and depends upon the yielding nature of the tissue affected; thus, an inflamed bone swells little: an inflamed soft organ may swell a great deal.

Interference with Function.—The function of an inflamed part may be stayed, or altogether destroyed, and pain induced if used: an inflamed leg, or eye, for instance, if the animal walks, or attempts to look at the light.

CONSTITUTIONAL SYMPTOMS PRODUCED BY INFLAMMATION.

When an extensive area is inflamed, or the seat of the inflammation happens to be an important organ, such as a lung, the whole system sympathises, and the animal becomes feverish, and is then said to have inflammatory fever, or, more simply, *fever* shown by heightened *general* temperature, rigours, thirst, dry skin, scanty, high-coloured urine, lost appetite, &c. (*See* FEVER.)

TREATMENT OF INFLAMMATION.

(ACUTE INFLAMMATION.)

The means chosen for the treatment of an inflamed part depend largely upon our capabilities of *getting at the inflamed part.* Remedies always act better the more directly they can be applied. Therefore, if a part, such as a foot, knee, hock, leg, etc., be inflamed, we can apply remedies *direct* of a most potent nature; on the other hand, if it be a lung that is inflamed, we cannot get to it to scarify it, foment it, apply lotions to it, and so forth, but have to give remedies which have to traverse the system before arriving at the inflammation, or we give remedies which act upon the system in such a way that the system affects the inflammation, starves it away, arrests or abates it, or otherwise influences it. It is obvious that remedies applied in such a roundabout way are less efficacious than those applied direct, not to mention the vast difference which it makes whether the harmful products of inflammation can get freely away or whether they are pent up.

Again, if inflammation is extensive, or attacks an important organ, fever is set up, and we have this to battle against. Though the abatement of the inflammation generally causes

abatement of the fever, still the fever reacts upon the inflammation, and has to be subdued by other means *besides* those used for the inflammation.

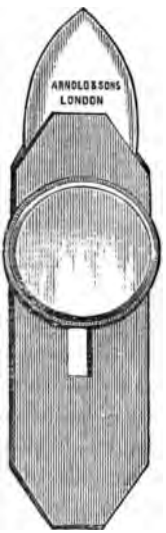
When an inflammation is local in every respect, and does not cause fever of the system, we have only the local trouble to aim at, which materially simplifies the matter.

The above considerations lead us to dividing the treatment of inflammation into—

A. *Local Treatment of Inflammation.*

B. *Constitutional Treatment of Inflammation.*

Local Treatment of Inflammation.—Punctures, scarifications, incisions, leeching, and cupping are useful, with a view to abstracting blood from an inflamed part. Arnold's guarded lancet is most useful, as it can be set to any required depth. A number of stabs with it into an inflamed part when the situation permits it, followed by hot fomentations to encourage bleeding, is excellent treatment. *Fomentations* with hot-water cloths, as described at the end of this work, and large hot *poultices* are useful, and must be persisted in for the first thirty-six hours or more. *Irrigation* with cold water, or the judicious application of bladders partly filled with ice, is excellent, and controls inflammations which rage within a few inches of the surface. Ice should be confined to the earliest stage of inflammation, or to that much later period which finds the vessels turgid and relaxed for want of tone. *Refrigerating lotions* form another way of applying cold, and so abstracting heat, and may be used in the intervals between hot fomentations or poultices. In superficial inflammations we



GUARDED LANCET.

must never lose sight of the fact that *belladonna*, applied as a liniment or ointment, has great power in controlling inflammations. The extract, mixed with a little glycerine, may be painted on the inflamed part, or a strong solution mixed with our fomentations or poultices. *Position and rest* are essential points to be attended to. We must always completely rest an inflamed part, if possible, and if possible place it in such a position that the blood can gravitate freely away from it—a thing less easily done in veterinary than in human practice.

Constitutional Treatment of Inflammation.—The first thing we do is to establish a free drain from the bowels by a suitable *cathartic*, and a bran-mash diet. *Bleeding* from the jugular vein is highly useful in suitable cases. *Aconite*, given as directed F. xxxii., is much relied upon now in place of bleeding, and when properly used may often be trusted to supply the place of blood-letting.

(CHRONIC INFLAMMATION.)

When the inflammation has lasted days, or it may be weeks and months, the changes within the part from altered nutrition form the principal feature. In place of the distended vessels of acute inflammation, with the accompanying fluxion, we have *new formation of tissue and serous infiltration*. The pain, heat, redness, and swelling are present, as in acute inflammation, but variously modified. The constitutional disturbance may be present also, but instead of active fever it oftener assumes the character of impaired health. If important organs are in a state of chronic inflammation, the heat of the body may be slightly higher, but always distinctly higher at night or early evening. The pulse also is persistently higher, if not very high.

The treatment of chronic inflammation is different.

Treatment of Chronic Inflammations of Internal Organs.—If the inflammation is only a stage removed from an acute inflammation, we must still have recourse, if not to lowering

measures such as cathartics, bleeding, low diet, &c., to non-stimulating diet and measures. *Mercury* is now of essential service in arresting the further progress of the inflammation, and in removing, by causing absorption, of effusions. As, however, this volume purposely avoids treating of those serious internal inflammations requiring such treatment, we may pass over the use of mercury as an internal remedy, also other internal remedies.

Local Treatment of Chronic Inflammations.—At least nine parts out of ten of a veterinarian's duties as a surgeon consist in treating local chronic inflammations, especially in horse practice.

Local Blood-letting.—Scarification, puncturing, &c., are useful methods of abstracting blood locally, the object being to unload the blood-vessels, that the few minutes of relief may, as it mostly does, allow of their regaining their tone somewhat. Thus, we remove the shoe and scarify the sole, and after making blood come, encourage its flow by placing the foot in a pail of hot water, or, by means of Arnold's guarded lancet, make several punctures of a soft part and apply hot fomentations. We must never forget that a bleeding, as here described, is often advantageously repeated once or even twice at intervals of a few days.

Warmth and moisture are less serviceable than in acute local inflammations, but they may be used if the chronic inflammation has much of an acute character remaining. *Cold*, persistently and intensely applied as in acute inflammation, will do positive harm; but an occasional short application is of great service. Iced cold water, from the rose of a gardener's can, or from a hose for a minute or two several times a day, is of the highest service, by causing a brisk reaction, and stimulating the circulation of a part to increased effort, if even for a short time. Of course the part must be quickly dried and either hand-rubbed or rubbed with a soft cloth or some stimulating embrocation.

Counter-irritants are of very pronounced service when the inflammation is of a thoroughly pronounced chronic character. Repeated applications of "sweating" blister—*i.e.*, ordinary blister of any kind so mildly used that an exudation called a "scurf" only is induced, which is removed by first being softened with hot soap and water, the parts dried, and the "sweating" application re-applied. Thorough *blistering* is oftener resorted to, and with great and lasting benefit. It may often be advantageously repeated. *Issues*, in the form of rowels or setons, are of the highest use, and their mode of application will be found under OPERATIONS, at the end of the volume. The *actual cautery*, generally called "firing," has been used from remote antiquity, and is more highly prized among surgeons and veterinarians of the present day for deep-seated chronic inflammations, as of joints, than any other method. It is by no means so painful an operation as might be supposed, when care is taken to have the irons at a proper red heat. *Astringents*, such as lunar caustic, are useful in surface chronic inflammations. *Pressure*, as applied by Arnold's "pure rubber" bandages, or by well-adjusted woollen bandages, is of the highest service, especially where the weakened vessels of a part allow effusions and thickenings, such as soft swellings on the site of old sprains. The bandage presses out the effusions and supports the vessels, and encourages them to regain their proper tone. It is along with such treatment that *mercurial liniments*, *camphor liniments*, and *rubifacient applications* are of such signal service. Mercurial "charges" are of less service, on account of the *pressure* being deficient.

ON THE DETECTION OF ILLNESS AND INDISPOSITION.

(1) **Note departure from accustomed habits.**—Thus, if a horse is standing in his stall, does he seem at his ease, eating and looking cheerfully about him? or is he hanging back in his

stall with his head down? If in a field, is he grazing or larking with his fellows, or prying over the hedge at what is going on that he can see or thinks he hears; or is he standing in a corner of the field with his head down, or wandering with his head down and not grazing?

(2.) **Note his position in standing.**—Without enumerating the various attitudes of the horse familiar to everybody, we pass on to remark that the positions assumed in illness are very characteristic. Thus, in inflamed laminæ of the fore feet, these feet are advanced and the horse is trying to keep his weight on the heel parts, whilst the hind feet are brought quite under the body; in navicular disease, the foot affected is thrown under the manger while feeding; in luxated patella, the hind leg is stretched backward and is straighter than usual; in poll evil, the nose is held out and the head and neck carried as stiffly as if they were devoid of a joint; in inflamed lungs, he stands with his toes turned in and his elbows turned out; in commencing parturition the hind legs are far apart and the tail elevated somewhat. And so forth.

(3.) **Note if lying down.**—Lying down at unusual times is suspicious, but not necessarily indicative of illness. In colic, the lying down and rising frequently are noticed in the proper place, but we repeat here that a horse may have a fatal obstruction of the bowels and lie perfectly quiet without knocking about or otherwise showing pain.

(4) **If you suspect illness, but especially if you are sure of it, always commence by taking the temperature.**—The importance of this is pointed out under the head of FEVER.

(5) **Take the pulse and respiration.**—The circulatory and respiratory systems are so interwoven that it is impossible to examine and weigh their phenomena separately. The pulse in health should beat four times during every complete act of respiration or breathing. In large dray-horses the pulse may be 32, whilst in very little ponies it may be 40; that is, in medium

sized horses the pulse is 35 or 36, therefore the breathing varies from 8 to 10 or 11 times per minute, according to size of horse. Of course, all exertion or excitement accelerates the rate of both pulse and breathing, so that the above remarks apply only to quietude and rest.

(6) **Examine and inquire after the emunctories,** especially the bowels (their frequency of action, consistence of evacuations, colour, etc.), the kidneys (frequency of urination, quantity, colour, etc.), the state of the skin (whether perspiring freely, or being only properly moist—scarcely perceptible in the horse—or dry and harsh, hot or cold).

Symptoms of Disorder in Organs and Systems.

Note.—The reader must not expect to find every symptom present at any one time; there is usually a combination of two or more present.

a. **Disorders of the heart and circulation.**—These show themselves by dull, anxious expression of countenance; palpitation; blueness of the inner parts of the lips and eyelids; difficult breathing, cough; dropsy of the limbs; irregular or intermitting pulse.

b. **Disorders of the larnyx.**—Cough, (moist or dry) peculiar sounds in respiration; such as whistling, roaring, grunting, etc.

c. **Disorders of the lungs, or bronchial tubes.**—These give rise to quickened respiration, or to peculiarity of respiration, such as the double lift of the flanks in asthma or broken wind; modifications of the shape of the chest; as the round, barrelly chest of emphysema, the flat, motionless side from a "deaf" lung, etc. Cough, discharge from the nostrils (both) occasionally blood-tinged, difficult breathing, etc.

d. **Disorders of the kidneys.**—The symptoms which lead us to suspect disease of the kidneys are, pallor of the mouth and eyelids, dropsy, attacks of bronchitis, diarrhœa, deranged urination, and flatulence.

e. **Disorders of the liver.**—These show themselves in various ways, as by over-paleness of the stools, hæmorrhage from the bowels, dropsy of the hind legs and belly, flatulence, jaundice, stiffness of the right shoulder, etc.

f. **Disorders of the stomach.**—The stomach sympathises so with every organ that when it itself is the primary seat of disorder we are often thrown off our guard, and look for the cause away from the stomach. However, loss of appetite, flatulence, licking cold surfaces and lime-washed walls, and a foul tongue, are characteristic symptoms.

g. **Disease of the intestines.**—These show themselves in various ways, such as constipation, or diarrhœa, passing blood, or, what is more frequently the case, mucus ("molten grease"), tympanitis, pain (shown by striking the belly with the hind legs, getting up and lying down, or lying quite quietly at unreasonable times).

ON THE DETECTION OF LAMENESS.

Lameness manifests itself by unevenness of gait, and in unusual attitudes whilst standing. It arises from structural change, often accompanied by inflammation, in the hard and soft tissues. The hard tissues are the *bones*, *joints*, and *feet*. The soft tissues are the *muscles*, *tendons*, and *bursæ*.

Three Rules for Examination of Lame Cases.

First Rule.—First ascertain whether the horse is lame in front or behind. Of course the horse may be lame both before and behind.

Second Rule.—Ascertain whether the lameness is in the hard tissues, or the soft ones. We do so by acting upon the following principle:—If the hard tissues are at fault and pain causes the lameness, a slow trot on a hard level surface will jar the parts, and show the lameness best; if, however, the soft tissues are at fault, a trot or canter in deep "heavy" ground

such as a fallow field tells best. Always let a horse rest quietly in a shed or other cool place after a gallop in a field, and when he has been standing thus for twenty minutes or more, any flaw in the soft tissues shows itself by stiffness and lameness on first movement.

Third Rule.—Always remove the shoe of the lame limb, pare the sole and try the foot for sources of pain and lameness, such as corns, bruised sole, etc., however sure you may be that the lameness does not arise from the foot; for several reasons, but among others that the lameness may arise from the foot as well as from the disease we have determined upon as the cause of lameness: secondly, corns, bruise of the sole, thrush, etc., are the better for treatment (which can be conducted at the same time that we are treating the limb for the cause of the lameness).

Useful Memoranda.—It is highly useful to always bear in mind, when examining horses as to lameness, that—

1. In at least three cases out of every four, horses lame in front are lame in the *feet.*

2. In the great majority of cases, hind lameness has its seat in the *hock.*

Symptoms of Lameness.

Lameness in one Fore Foot.—Trotted gently on hard, even ground, the horse drops his head, "nods" on the sound side; the affected foot may be sensibly warmer than its fellow, if there be an inflammatory process going on. Have the shoe removed, pare evenly the entire sole, especially the corn place and the part about the point of the frog. If the horse has been newly shod, suspect a nail driven too near, or into the quick; try every nail-hole with pressure by the pincers, applied by yourself. The horse throws his lame foot forward during rest.

Lameness in both Fore Feet.—The horse has a "feely," shambling gait on hard, level ground. Try the feet as above.

Shoulder Lameness.—A horse lame in the shoulder cannot *advance* that leg, but rather *drags* it forward; in doing so he attempts to *swing* the leg forward, and swings it outwards. The muscles of the shoulder may or may not be wasted.

Note.—The elbow is an extremely rare seat of disease, and so are the knee and other joints; therefore, all other causes of lameness of the fore limb manifest themselves by tenderness and swellings, etc., appreciable to the *touch*, or *sight*, or both.

Lameness in the Hind Feet.—This is very rare, except from sandcrack or thrush.

Lameness in the Hock.—Hock lameness shows itself in the stall when the horse is made to "stand over" briskly, which he does with a limp. Again, the toe of the shoe is worn more than that of its fellow, as the horse goes more on his toe, and may carry it closer to the ground in going. The enlargements of bone and bog spavin are evident to the touch and sight.

Note.—When a horse is not lame in the hock, and he is lame behind, unless there be ringbone, sandcrack, or something to be seen, the amateur will hardly be in a position to determine the seat of lameness by any directions we can give.

ALPHABETICAL INDEX OF DISEASES.*

ABORTION — PREMATURE DELIVERY — MISCARRIAGE.—These terms have much the same meaning, and may be defined to mean the expulsion, by the uterus or womb, of its living or dead fœtus (foal, calf, etc.) before the natural time. It is more likely to occur in the early months of pregnancy than during the later.

Causes.—These are numerous, such as shocks to the system from injuries, over-exertion, death of the fœtus, frights, previous abortions, etc. Sometimes the female domestic animals of an entire district abort, and the disorder assumes the character of an epizootic.

Symptoms.—These vary with the period of gestation; in the latter half of the period the symptoms are much the same as parturition at full time, whilst in the early half of the period the symptoms are general restlessness, shifting of the hind legs, which are held apart more than usual, elevation of the tail, swelling and discharge from the vulva.

Treatment.—Remove to a cool, secluded place, that can be well darkened, and is well away from noises of all kinds. Apply cloths wrung out of cold or iced water to the loins and vulva (a bladder half filled with ice is excellent for the purpose). Give all food cold as possible, such as iced water, iced mashes, and to allay the irritation give two ounces of laudanum the first thing. Should the abortion proceed in spite of all our efforts, our only duty is to see that the whole fœtus with its membranes comes away. Keep quiet, give gruel, etc., as after labour at time.

* Such references as F. xxxvii. refer to the corresponding Formulæ or Prescriptions at the end of the book.

ABSCESS.—An abscess is a collection of matter (technically called pus) enclosed in a wall of lymph, usually; but it may not be surrounded by lymph, and so free to burrow in all direc tions. An acute abscess of the former kind ripens, and is said to "point," so that its centre softens whilst its perpihery remains hard. When thoroughly ripe, the abscess, circumscribed or not, should be opened with a Syme's knife as described under "Operations."

Treatment.—Hot fomentations, poulticing, and sulphide of calcium (F. xxxvii.) ripen an abscess that is slow in coming forward. After bursting or being opened, the discharge must be kept well cleaned away and the opening kept free till the abscess has quite emptied itself.

ACNE—WARBLES—GRUBS.—These names are all, or any of them, applied to an eruptive affection of the skin, usually of the neck, withers, and back. Small lumps, about the size of walnuts, appear, and gradually ripen without inflammatory symptoms to any marked exent, and gradually become full of matter (pus) and burst, or have to be evacuated.

Treatment.—If the warbles are on any surface where the harness presses, work must be stopped; indeed, it is often the best policy to rest the horse in a cool, loose box, apply hot fomentations to the warbles, to feed on bran-mashes and other low diet—giving a brisk cathartic to begin with—and evacuate each warble as it ripens. Such warbles as are backward may be ripened by sulphide of calcium (F. xxxvii.), and all after bursting, or being opened, must be kept clean.

Some horses are very subject to the affection; indeed, many horses are half-worthless on this account, as the moment the collar touches them and they get out of health, acne shows itself. Such horses should have extra attention to the skin, and take F. xviii. now and then.

AMAUROSIS.—GUTTA SERENA—GLASS EYE.—These names are given to an incurable blindness, arising from disease of the brain or spinal cord, where the eye or eyes maintain an open fixed stare and have a glassy appearance, through the pupil of the eye being widely dilated and the iris immovable. The disease usually comes on slowly, and arises beyond the eye, usually in the brain or cord, which is left more or less impaired, but quite blind. Temporary amaurosis (reflex) may arise from teething, intestinal worms, etc., and is cured by removal of cause.

ANÆMIA.—Deficiency or poverty of blood. The red globules of the blood are diminished to half their proper quantity; the liquour sanguinis is poor in albumen and may contain an excess of salts. This blood poverty is brought about by any undue call upon the system, such as loss of blood; drains, such as discharging abscesses; bad food, or such as is not judiciously chosen with regard to its nutritive qualities; polluted air; but most commonly it is due to some poison destroying the blood, such as arsenic, the poison of glanders, etc.

Symptoms.—Weakness, distress for want of breath on exertion, paleness of the inner part of the lips and eyelids, emaciation, especially when the cause is a blood-destroying one.

Treatment.—Search out the cause, and remove it if possible; then, after comfortably housing, give a nutritious diet. In cold, clean drinking water mix a drachm of dilute nitro-muriatic acid three times a day, and give upon small mashes half a drachm of citrate of iron and ammonia (F. xxxviii.) night and morning. Should there be constipation, as there often is, give castor oil (F. xiii). Should swelling of the limbs from dropsy be at any time present, give no diuretics, but rely on the above treatment together with hand-rubbing, gentle exercises, and warm flannel bandages. An excellent addition to the above treatment is a quart of sound ale night and morning, given in a clean pail.

ANASARCA, or GENERAL DROPSY.—*See* DROPSY.

ANCHYLOSIS.—This is a growing together of bones which are naturally separate, and occurs most frequently in the bones of the vertebra (backbone, or vertebral column) which extends from the head to the tip of the tail. As a whole, this column bends a good deal, but there is little movement of any one bone upon its fellows. That part of the backbone between the withers and commencement of the quarters is the part most often implicated, and the loins part of this, again, more than the part between the loins and withers. Other bones, such as those of the lower part of the hock, with little movement, are also sometimes anchylosed.

Symptoms.—Anchylosed back is most common in aged horses which have shafted heavy loads or borne great weights on their backs. There is a stiffness of gait, especially noticeable on turning round on the same ground, when the hind legs are clumsily crossed. The horse lies down less in resting, or perhaps never at all.

Treatment.—There is no cure, of course; but when the horse does not lie at night, he should sleep in slings.

APOPLEXY.—Is far from being a "simple ailment," but occurs so suddenly that a few words on its nature and treatment are desirable. When a horse suddenly falls down and becomes unconscious—whether the falling be like a stone in suddenness, or some staggering precedes—lies prostrate, with fighting of hind limbs; eyes wide open, glassy-looking (amaurotic), and fixed or rolling in their orbits; breathing loudly, etc., he is said to be in a "fit."

Treatment.—As a rule the "fit" is mortal, because it arises from blood on the brain, that has either burst out of its vessels, or if in its vessels has become hopelessly clogged. Whilst life lasts something should be tried. Whilst proper assistance is being fetched, lave cold water on the head; prop up the head and neck well with straw; loose everything tight

about the body; especially remove the collar, if on. Open a jugular (*see* BLEEDING), place twenty drops of croton oil (F. xx.) on the tongue; give copious enemas of warm soap and water.

ARTHRITIS.—An affection of the joints. *See* CHRONIC RHEUMATISM.

ASCARIDES.—*See* ENTOZOA.

ASCITES.—*See* DROPSY.

ASTHMA, called also "Broken Wind," is characterised, as its name implies (*asthmazo*, to gasp for breath), by distress in breathing; the animal taking in air suddenly and expelling it by a double effort, best seen by watching the flanks. The flanks drop suddenly at each inspiration, but lift twice at each expiration.

Symptoms.—Besides those seen at the flanks—produced by breathing effort, as above described—there is always a sepulchral cough, called "broken-winded cough," which once heard is not likely either to be forgotten or mistaken for any other cough. The digestive powers are always bad, and the animal troubled with flatulency, which escapes with loud explosions on the animal being struck with a whip or in trotting; hence, possibly, the name "broken-wind." It is a spasmodic affection, depending upon *spasm* of the smaller branches of the bronchial tubes (the small bronchial tubes being encircled by muscular fibre), which nearly closes them, and prevents air getting along the tubes to the lung substance, to be purified; but, after forcing its way through, the same spasm and closure, in some cases, keeps the air in the air cells of the lungs. When so confined in the air cells, the air breaks down the partitions, separating one cell from another; and it should be remembered that these partitions hold the blood-vessels which contain the blood whilst being purified. It therefore follows that the blood-

aerating area is diminished, and this causes the dyspnœa. The cavities formed by breaking down these partitions render it impossible for the lungs to collapse at each expiration, and they are then called emphysematous. This constantly expanded condition of the lungs gives a barrel-like roundness to the chest, and renders the chest more resonant when the ribs are struck with the knuckles. However, asthma may have been present for years without causing this emphysema. Musty hay is often blamed for producing asthma.

Treatment.—This will largely depend upon the supposed cause of the affection. No spasm of muscle can occur without a so-called stimulus; so that to cure asthma in its incipient stages, and mitigate it at other times—for, like spasmodic disorders generally, it is worse some times than others—all sources of irritation should be removed. All matter irritating the air passages, such as cold air, air filled with sulphur fumes, or ammonia fumes (such as are given off by decomposing urine), &c., should be avoided; all things irritating the alimentary canal, such as indigestible food, worms, excess of bile, or irritating drugs, must be noticed.

Give pure air, not too cold; easily digested food; keep the bowels well going by mild oleaginous laxatives, such as F. xiii., and carrot or turnip mashes occasionally.

A singular and interesting fact, involving too much explanation here, is this: large quantities of shot and goose fat are given by horse-cheats to these "broken-winded" horses, which so far disguises or modifies the symptoms for a day or so that sales of the worst cases are effected, and the new owner only finds he has been cheated after putting his new purchase through a dose of physic and ridding him of his shot.

BACK SINEWS, SPRAIN OF.—The back sinews or tendons of both hind and fore extremities are liable to sprain, but more especially those of the fore legs. When the pasterns

are long and oblique, the back tendons are very tense under ordinary circumstances; but the strain on them is often unbearable in the gallop, drop-leap, or even alighting at an ordinary leap, and under other conditions. Sprain of them may be immediate or brought about by degrees—usually the former. The sprain may consist either of over-stretched fibres of the tendon or sinew, or laceration of more or less of these fibres, or entire rupture of the whole, as in "breaking-down." In this place one or other of the two former conditions only will be noticed.

Symptoms.—Great lameness, swelling, heat, and tenderness on pressure of the part affected, reveal its nature.

Treatment.—When *recent*, there is first the inflammation to subdue; second, the inflamed products to remove; and, lastly, the parts to invigorate and strengthen. These three stages of treatment will each occupy ten days at least, the last possibly twice ten days; so that after a severe sprain of the back sinews we may expect loss of services for a month or six weeks, if not more. In sprains of longer standing, that have either not been treated or treated badly, the active or acute inflammation will have gone; the parts will be found warmer than natural, but not hot, the lameness less pronounced, but the thickening more extended up and down the limb.

BLACKWELL'S LEG FOMENTER.

To subdue the active inflammation of fresh sprain of the back sinews of any leg, remove the shoe, and bleed at the toe copiously; put on a high patten-shoe, so as to lift the heel and take off the strain upon the tendons; place either in a leg-tub of hot water, or foment in the ordinary way, with flannels wrung out of hot water, for hours at a time; prepare for and give a cathartic (F. xii.) without delay. The fomentations must

be applied one day after another, if need be, for four or five days, after which, up to the tenth day, diuretics (F. xxiii.), mashes, rest in a loose box, and cold water bandages are to be used, taking care never to let the bandage remain on in a dry state. The second ten days are to be spent in blistering the parts with F. xliv., all the while keeping on the patten-shoe, placing in a loose box, and giving low diet; the discharge from the blister being kept up, by painting a little fresh blister on from time to time, though the discharge must be softened with hot soap and water, and kept well cleared away as it forms. The third process of treatment must be with a view to strengthening the weakened parts. Place on an ordinary shoe, use cold water douching, hand-rubbing, hand-lead exercise, and place gradually on full diet.

In sprains of longer standing, where the inflammation has not been attacked at the time, the inflammatory products settle about the parts, and get hard and almost unremoveable. In these cases treatment is less efficacious. The second and third processes of treatment, as above described, are to be tried, with this difference—that the blistering must be more severe and oftener repeated.

BALANITIS—EXTERNAL CLAP—GONORRHŒA OF THE PREPUCE.—This is an inflammation of the parts within the sheath, caused by the natural secretions accumulating in excess, or decomposing, or both combined. This irritates the end of the penis or yard, and causes ulcers to form upon it, and on the inner surface and orifice of the sheath. Great swelling may also be present, and a good deal of feverishness accompany the disorder.

Treatment.—The measures required may become of too formidable a nature for the amateur. All he must attempt must be confined to placing under physic and low diet; washing out the sheath with fresh supplies of hot soap and water;

getting out the penis, where possible, and washing it also; then applying to the penis and sheath F. lvi., using a syringe if needed. The lotion thus used should reach the surface of all the sores, and should be applied several times a day.

If the orifice of the sheath be swollen up, or should large, raw-looking tumours resembling warts appear, or the fever run high, professional aid must be called in.

BITES.—Should a horse be bitten by a rabid dog, the wounds must be washed at once with hot soap and water, and quickly dried, and a stick of lunar caustic rubbed freely over every part of the bite, taking care to insert and rotate the caustic point in all deep, narrow punctures that can be found. Should the part bitten be a leg, and a leg-tub and carbolic acid be at hand, a few ounces of the acid may be placed in the tub, having hot water in it, and the leg soaked for half-an-hour—taking care to stir the acid well into the water. Either method is efficient, if early applied; but, however long after the bite, one or other of these procedures should be adopted.

BLEEDING AT THE NOSE.—*See* EPISTAXIS.

BLOOD SPAVIN.—When the capsule containing the synovia or joint oil of the true hock joint is unduly distended by this synovia, a large vein called the saphena becomes pressed upon and distended, and this gave rise, formerly, to the notion that this vein was ruptured, and shed its blood into the capsule of the joint; hence the term *blood*-spavin.

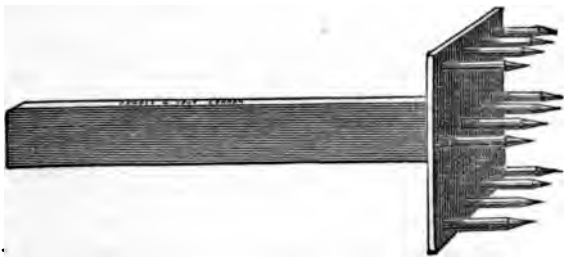
Treatment.—The capsule may be simply dropsical, or it may be in a chronic state of inflammation. If any treatment be thought desirable, rest, and a little sweating blister, is perhaps the best treatment.

BLOODY URINE.—*See* HÆMATURIA.

BOG SPAVIN.—This is another name for BLOOD SPAVIN, *which see.*

BONE SPAVIN.—When an exostosis appears on the inner surface of the hock, quite at the bottom, it is called bone-spavin. If situated quite forward, it gives rise to these

Symptoms.—Lameness or limping at starting, which may wear off as the horse gets warm. The toe is always carried nearer the ground, hence the shoe at the toe is often found to be more worn. The limp of a painful spavin is often well seen on making the horse "stand over" quickly in his stall. The enlargement can be seen also, however small; but the horseman had better rely on touch, not at all on sight, in slight cases where there is no great lameness. Gently pass the first two



SPAVIN PUNCH.

fingers over the seat of spavin, *well in front* of the hock, at the bottom, on the inner side, and quickly compare this with the fellow hock. Spavin situated far back is never a cause of lameness and never requires treatment when confined to this situation.

Treatment.—Rest in a box for six weeks, and either firing, punching, setoning, rowelling, or repeated blistering. The author prefers firing. If the extent of the spavin be limited, then quite as good results are to be obtained by setoning, or by a combination of punching and repeated blisters. Punching, at the time of blistering, became more and more the favourite treatment of the author's teacher and predecessor, Professor Dick, the founder of the Edinburgh Veterinary College. This

great teacher strongly advocated this combination in one of his last lectures, which the author was privileged to hear.

BOTS.—*See* ENTOZOA.

BOWEL DISEASES.—The suddenness of their onset, their rapid fatality, and their frequency, must be the author's excuse for inserting descriptions of diseases so terribly fatal in a work whose title is "Simple Ailments." Even where professional aid is near and procurable, a knowledge of bowel diseases by amateurs is highly useful; but when a journey has to be taken before professional aid arrives—especially in summer, when the horse is feeding on green food—the doctor not unfrequently arrives to find men busy skinning his would-be patient.

The various disorders are treated of each under its respective head alphabetically, but some general ideas concerning the bowels, their mechanism, and relations to the parts around them must be obtained before any one disease can be understood, because *almost all bowel diseases commence by exaggeration of the functions natural to the bowels in their most healthy condition.* Thus, spasm of the bowels is an exaggeration of the vermicular motion, so is intussusception, so very often is diarrhœa. Flatulency is exaggeration, or rather superabundance, of gases in the bowel; flatulent colic is an exaggeration of flatulency, giving rise to great pain; some of the hernias are exaggerations of the pressure on the weaker parts of the abdominal walls; and so forth.

The following may be found a useful description of bowel mechanism, function, and surroundings sufficient for our purpose:—

On looking at the abdomen or belly of a horse in health we find it rounded and comfortably distended; on pressing it, an elastic resistance is experienced, like pressing an inflated india-rubber cushion. On opening the abdomen in a healthy state immediately after death the bowels are all found dis-

tended, and ready to burst out of the incision we make; but after the incision is completed, an attempt to pull out the small bowels fails, for it is evident they are firmly attached to something within, which must be cut before they can be got out. If let alone, after the incision is complete, the small bowels are seen to be folded on each other a good deal, and to lie all together in a lump. Not only so, they are seen to move —the animal being quite freshly killed—and appear as if they

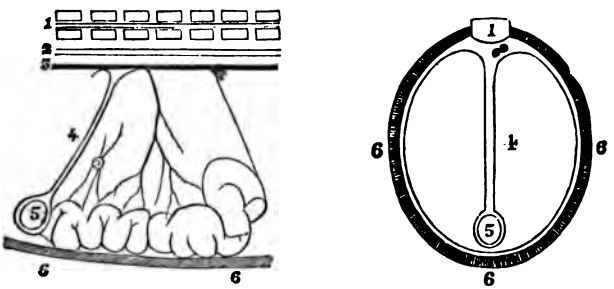


DIAGRAM SHOWING BOWELS SUSPENDED.

1. The Spine or Back-bone. 2. The large Trunk Vein. 3. The large Trunk Artery. 4. The reflected Peritoneum (Mesentery) suspending the (5) Bowel.

were wrestling with one another, and trying to keep each other down. We see, at once, it is these distended bowels that have caused the round appearance and elastic resistance of the abdomen; but why cannot we pull them out? What gives them their tortuous appearance? What moves them? And why does this movement cause them to be rolling over one another, in a quiet, constant manner?

With the aid of the diagram, not only can we answer the above question intelligibly, but by it the diseases themselves may be rationally explained, at least sufficiently for our purpose.

The spine or backbone forms the top or roof of the abdominal cavity, whilst the floor and sides are apparent in the living horse, and are made of an outer covering of skin, muscles, and

a dense yellow elastic sheet. The small bowels are slung or suspended from the roof by a broad white sheet, called the mesentery. In reality, the mesentery is the peritoneum under another name, and this peritoneum *lines the whole of the abdomen and its contents* nearly. As seen in the diagram, the peritoneum, after lining the floor, sides, and roof of the abdomen, dips down and encloses the bowel, supporting it like a sling. This shows that we should require to have strength to tear across this mesentery to pull the small bowels out of the abdomen. In other words, these bowels are tethered to the backbone like a yard-dog to a stake—the sheet-like, folded peritoneum (in this part called *mesentery*) representing the dog's chain. What gives them their tortuous appearance? It may be very roughly but pretty accurately described thus:—Suppose a short hook be driven into the centre of the ceiling of a room, and we could take a sausage twenty yards long or more—the length of the small intestines of the horse—and then tie a two-foot string to every foot of the sausage, then tie all the sixty strings in their order to this one hook, and let the twenty yards of sausage swing. It would fall into folds, but would fall into closer folds if it were gently distended with air instead of more solid substance. Our strings represent the mesentery, only the mesentery is *sheet-like* and as broad as the bowels are long at its attachment to the bowels, but is only a few inches broad at its attachment at the roof; hence the *folds* of the small intestines and their tortuous appearance. What moves them? To answer this question we must observe that the small intestinal tube is made up of three thicknesses or coats:—1, the layer of peritoneum we have described; 2, a muscular coat; and 3, a lining of mucous membrane. The peritoneal coat, as we have seen, is there in its function as a suspender; also it sends forth a steaming vapour, which lubricates their outer surface, and enables the guts to roll on each other and the parts around without friction. The muscular coat—stimulated by nerves

—moves the bowels in two ways; it shortens them lengthwise by a set of muscular fibres, which run lengthwise, and it constricts them transwise by encircling muscular fibres. These two directions of movement (alternate shortening and lengthening, and alternate constricting and widening), carried on at the same time, pass the food along and give the bowels their creeping appearance, which is called the *vermicular* motion, from *vermes*, a worm. The inner or mucous membrane coat throws out juices known as intestinal juices, and allows the juices and nutrient matters from the food to filter through it back again to reach the blood; the first of these being called secretion, the last absorption—the two processes going on at the same time.

Spasm of the bowels, also called colic, fret, or gripes, arises from the natural muscular constrictions being too severe. It is the presence in health of the *bland*, partly digested food lying on the inner surface of the small intestines, which stimulates the nerves, which again force the muscles to contract; so that when any *acrid* matter takes the place of the bland food, or is along with it, the gentle stimulation is supplanted by violent irritation and the muscles contract violently, because they are violently stimulated by the nerves, which again are violently irritated by the acrid matter. Badly prepared physic, food that has turned sour in the stomach, round worms, water containing large quantities of certain minerals, large volumes of cold water passing over the intestinal surface,* especially after exhaustion from hard work, and other things, cause increased constrictive movement of the small intestines and give rise to griping pains.

Diarrhœa often arises from acrid matters, and the above mentioned causes, which give rise to increased vermicular

* Water when swallowed by the horse passes through the stomach at once, along the small intestines, to gain the caecum—a large gut or pouch, holding some gallons.

movement—the irritant also causing the mucous membrane to pour out a larger quantity of intestinal juices. So with

Dysentery, though the large bowels are often more implicated.

Superpurgation is a kind of diarrhœa, where we have the great advantage of knowing that it is an over-dose of irritating matter which has caused it.

Intussusception (so called from *intus*, meaning within, *suscipio*, to carry), is a very singular accident, where a piece of small intestine telescopes into the piece of intestine immediately in front of it, just as the finger of a glove is pulled within itself. This, of course, arises from the muscular movements (vermicular motion) going wrong. When once this telescopic condition takes place, congestion, then effusion, and lastly, inflammation—and perhaps mortification—may result. The canal of the bowel gets more or less obstructed any way.

Flatulency is an over-fulness of the bowel with gas, causing a sense of uneasiness and oppression.

Flatulent colic, again, is flatulency to such an extent that the stretched bowel is highly painful.

Constipation takes place from several causes. After the food in the form of chyme has passed through the small bowels it remains in the large bowels, where with other waste matter it dries to a certain extent, and assumes the character known as fæces (droppings). If it lie too long and get too dry, it is more difficult to move forward. Then again the bowel movement, from many causes, may be weakened, and so unable to move the fæces to the outlet or anus.

Obstruction is said to be present when the constipation or inaction of the bowels is so great that even purgatives will not cause an evacuation.

The hernias are numerous, if we are misled by the distinct name given to hernia according to its situation. Thus, ventral hernia is a bursting of the bowel through a part of the ab-

dominal wall; inguinal, umbilical, scrotal, etc., are all different names for escape of some of the abdominal contents through the parts indicated by the name. They are, so far as the bowels are the parts involved, results of extraordinary pressure upon the bowels, and perhaps of the inherent weakness of the parts penetrated. Always distended and ready to burst through their bounds, extra pressure, as in foaling, defæcation, etc., completes the case.

Ruptures of the bowel are produced by pressure, as in flatulent colic, overloading with food, etc.

"**Molten grease**" is a symptom, not a disease *per se*. It was thought that the animal fats melted, and came away with the droppings (fæces), but now we know better.

BROKEN KNEES.—The term broken knees is very unsatisfactory, because it conveys no idea as to the extent of the damage done. So important is it to maintain not only the joint and skin, but the very hair of the knee in its integrity, as one proof among others that the animal is sure-footed, that the mere chipping of the hair of the knee is with horsemen termed broken knees as much as the greatest laceration and laying open of the joint itself. If the hair only gets chipped, of course a few weeks will obliterate the blemish; if the skin be grazed and bruised, the hair will ever afterwards tell the disagreeable tale that the horse has been down on his knees, but no great amount of treatment is required beyond rest in a box, a cathartic and lowered diet, fomenting the injury night and morning with hot water, applying F. lvi. several times a day, to keep the inflammation down as much as possible.

When the skin is cut after a fall, if the owner is not quite sure that he can see the extent of the damage—that it is no deeper than the skin—he had better seek professional aid at once. When the skin is cut, "joint oil" may escape, although the joint be not opened, as the "oil" may come from the sheaths

of tendons. It is difficult to distinguish between cut sheath of tendon and open joint, and quite beyond the reach of the amateur. The author, therefore, only gives the following directions for those who cannot procure proper advice.

Treatment. — When "oil" or synovia appears, treat as if the joint itself were open, though it may not be so. Give a brisk cathartic (F. xii.) at once; also very low diet; keep the horse standing quite still in his stall, but, for convenience of getting to the parts, the reverse way (his tail to the manger). Do not foment, but place pieces of absorbent cotton, saturated with styptic colloid, on the wound, with absorbent cotton, and a bandage over the whole. This must not be disturbed, if it keep well on, for five or six days, when it may be changed. At the end of eight or ten days the wound will have become an ordinary abraded wound, to be treated with fomentations to remove discharges, and with F. lvi., as in the case where the skin only is abraded, as described above.

Nothing can make the hair grow again when once the roots have been destroyed; but rubbing in ointment (F. lx.) a few times will often remove deposit in the skin, which would otherwise prevent the hair growing, or at least turn it grey and stubbly. It also stimulates any weak roots of hair which may happen to be left.

BROKEN RIBS.—Blows by the passionate shoeing-smith with his hammer or rasp, and kicks from other horses, often break the ribs. If the skin and tissues down to the fracture be opened, it is called compound; if the rib only is broken, whether the broken ends of the rib have penetrated the lining of the chest (pleura) and the lung or not, the fracture is called simple. Simple fracture is not easy to discover.

Treatment.—In simple fracture where crepitation is distinctly felt, if the lung be penetrated also, air will get under the skin around the fracture and crackle on pressure. Keep

the animal loose in a box, with a surcingle *tightly* bound round the chest. This steadies the fracture, which will mostly do well. Lowered diet, and in summer green food, may be given; but a cathartic is not so often needed. Simple fractures seldom are found out where the pleura has not been injured. The treatment in compound fracture must consist of a cathartic (F. xii), rest, and low diet, with absorbent cotton, soaked in styptic colloid, placed over the part, and a large layer of dry absorbent cotton over this again, and the whole held on with a lightly fastened surcingle. Professional aid is almost indispensable.

BRONCHITIS.—This consists of either acute or chronic inflammation of the air tubes, extending and branching and re-branching from the bottom of the windpipe to the minutest twigs of the branches of these tubes.

Causes.—Exposure to cold and wet; breathing irritating matters, such as fluid medicine getting down the wrong way; or it may be, and very frequently is, a sequel of heart disease. Various constitutional affections, such as rheumatism, develop it.

Acute bronchitis assumes one or other of two distinct varieties:—

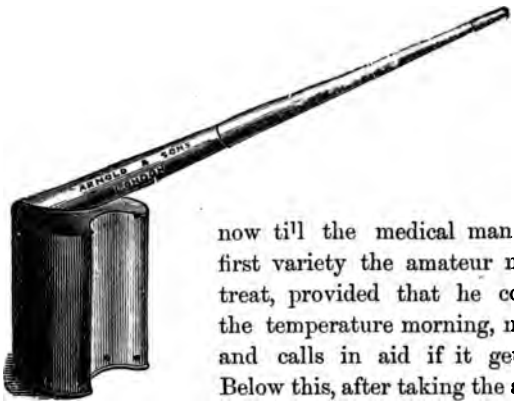
1. When the larger and medium-sized air tubes are alone affected.

2. When both the large, the medium, and every part and branch, to the very smallest twigs, so to speak, are affected.

Symptoms.—Distress in breathing very often, but always in the second variety of the acute; the breathing is quickened, the ribs as well as the flanks labouring. The pulse is soft, but not more than sixty to eighty in the first variety; neither, in the first variety, does the temperature rise more than two degrees, or three at most. There is a harsh, loud, ringing cough, dry or moist, as the tubes are secreting freely, or are dry. When the pulse gets very frequent and small, and the inside of the

mouth very livid and clammy, and the temperature rises, the second variety of the acute is present, and death imminent.

Treatment.—First take the temperature, and see whether it is above or below 103°; if above, never attempt treatment, but send *at once* for professional advice. Anyhow, place in a large, well-ventilated loose box, having its atmosphere constantly saturated with steam from a bronchitis kettle. Put on clothing according to season, also bandages; then give cathartic (F. xix.); and, if the second variety, wait now till the medical man arrives. The first variety the amateur may venture to treat, provided that he constantly takes the temperature morning, noon, and night, and calls in aid if it get beyond 103°. Below this, after taking the above measures, his object will be to keep the secretion from the tubes freely going, by giving F. xxv. every two hours. When the discharge is too free, and the disease is the first variety of the acute, also in chronic bronchitis, with too copious discharge, give, instead of the last formula, F. xxvi.; and of course the patient has to be treated in every way as in fever, by low diet, &c.



Bronchitis Kettle.

BRUISES are really wounds without the skin being opened. The parts bruised do not, as a rule, break open and suppurate, because the skin acts as a protective to the wounded tissues and prevents irritating matters lodging in the parts; therefore, the inflammation set up has a tendency to keep within bounds, and the inflammatory

products, after being thrown out, which causes the swelling, are mostly reabsorbed, and the parts settle down, but remain weaker for a time of course.

Treatment.—In fresh bruises apply hot fomentations and cooling lotion (F. lvii.) assiduously, or otherwise, according to the severity of the bruise. A cathartic and low diet is only required in the very worst cases. Rest of the parts is essential; and, after the tissues are recovering from a severe bruise, cold water douching is good treatment. Should any inflammatory products remain, and their presence threaten to make the horse less useful, a series of blisterings, as in sprained back sinews, must be applied.

BRUSHING OR CUTTING.—When a horse gets leg tired, or if his fore legs are badly "set on," and he turns his toes out, the inner surface of one foot is apt to brush and cut the skin over the fetlock-joint of the fellow leg. Nothing can prevent an occasional accident of this kind from leg tiredness, and so forth, but liability to brushing and cutting is a drawback, as it renders the horse less safe on his legs; a very severe blow is apt to bring him on to his nose, if the part struck be a fore fetlock. Any part above or below the fetlock may suffer, even the inner aspect of the knee.

Treatment.—The farrier should be warned to bevel the shoes on their inner side freely. Indeed, most farriers know what to do in these cases, when told of the failing. The brush (bruise or cut) has to be treated according to the principles laid down under article BRUISES, or when the skin is cut, the part may be fomented, and styptic colloid applied with a soft feather.

BUCK EYE.—This more expressive than elegant term is applied to a defect in conformation of the two eyes, always congenital, consisting of over-convexity of the clear transparent front half of the eyeball (cornea). The effect of over-convexity

of the cornea is to lengthen the eye-ball from before backwards; also, the cornea, which always in health helps to converge the rays of light as they pass through the eye, so that the rays may focus at the retina, when too convex causes the rays of light to come to a focus in front of the retina, so that the image of objects seen is blurred. It is not a very common defect, but is quite incurable, as no one has yet trephined the cornea of the horse, so far as the author is aware.

BURNS AND SCALDS.—The danger in these cases varies: (1) according to the *extent* of surface injured; (2) the *degree* of tissue destruction; (3) the importance of the organ implicated; and (4) the age and constitution of the patient; a slight burn of large area being much more dangerous than a deeper burn of more limited extent.

Symptoms.—The burn or scald is obvious enough, so that our anxiety centres in the amount of shock the system has suffered. Bad symptoms are a rapid, feeble pulse; coldness of the skin and extremities, with shiverings; no reaction setting in, but more exhaustion. Or, violent reaction setting in, with fever, discovered by frequent observations of the temperature, which should always be our beacon. The great danger, should fever set in, is the congestion or inflammation of either the brain, lungs, or bowels. When the subsequent discharge comes to be profuse, the hectic fever is dangerous.

Treatment.—Brandy, with opium, is our sheet-anchor when the accident is recent, to relieve the excessive pain, and enable the system to tide over the shock. Give two ounces of laudanum in a stiff glass of hot brandy and water, as soon as possible. This is to be repeated, if reaction fails to set in, in three hours. It much assists the brandy and opium to apply soothing remedies to the wounded parts. Parts capable of immersion in cold water should receive that boon; others not so

capable are to be treated with carron oil (F. l.), thus:—Take an old bed-sheet, and tear it into pieces that will rather more than cover the surfaces affected, dip these in the carron oil and place them on at once, and cover over with cotton wool, keeping the whole in position by light bandages. Give castor oil (F. xiii.) when the reaction begins, which will be indicated by hot skin, hot mouth, etc. Low diet, a cool, roomy loose box, and a change of dressing night and morning are essentials. When discharge of matter (pus) comes to be profuse, the diet should be very nourishing, to meet the drain on the blood which takes place: milk, with eggs beat up in it; well made beef tea; small feeds of oats; also small malt mashes, the best hay, etc. Should the discharge be very profuse indeed, besides the above we may give a quart of stout night and morning, having half a dram of citrate of iron and ammonia dissolved in it. Care should be taken that the dressings do not get hard and stick—a certain sign that they are either not changed often enough, or that too little lubricant is used. Vaseline may take the place of the carron oil, when once suppuration commences. Should granulations (proud flesh) rise too high, they must be treated like other granulations. (*See* ULCERS.)

BURSAL DISEASE.—When parts of the animal mechanism rub upon each other habitually, some provision for lubrication always exists; thus, the lungs and sides of the chest are always rubbing each other, and friction is prevented by a fine steamy secretion from the whole surface rubbed; so it is with the bowels, etc. When tendons or sinews glide over or through a part, they are usually surrounded by sacs (bursæ), which hold synovia (joint-oil), or something very like it. When tendons are stretched violently, or have too much gliding backwards and forwards, the bursæ through which they pass try to meet the emergency, and secrete more synovia, which distends the bursa—makes it stand prominently out—gives it a baggy

feel, as of an air-bag, and, in the worst cases, some inflammation is present, indicated by heat of the parts. These diseases, or rather this disease, receives different names, according to the part affected; thus we have the so-called "wind-galls" of the fore legs—so called because it was thought that it was wind which caused the swelling; thoroughpin of the hock, so called because it so far appears to act like a pin in being capable of being pushed *thorough* (old name for through). When the legs suffer much from these bursal distensions, they are called in some parts of the country "blown," and are said, and truly so, to "show work."

Treatment.—When possible, stop off all work; place in a loose box; give a cathartic (F. xii.) and low diet, and reduce any inflammation that may be present by hot fomentations and lotions (F. lvii.) When grooms who know their business see a horse working very hard, they always feel his legs for heat and dryness, just as an engineer feels the collars of shafts that are running with extra speed, to feel if they are cool. The devices used by good grooms consist of cold water bandages, but when the legs are hot and filled, or thickened in spite of these applications, work has either to be stopped or modified. When work has gone on, and the bursæ are permanently overfilled, the best thing the amateur can do is to apply at least two blisters (F. xliii.)—one after the other—and keep up a prolonged discharge from both, by smearing on fresh blister (*see* BLISTERING). After doing so, the rate of oil secretion can be considerably modified by belladonna (F. xlix.)

CALCULI.—Stones or calculi are liable to form in various parts of the body, and at times to give rise to most excruciating pain, as they travel along the excretory canals leading from the organs in which they are formed. The most frequent varieties are gravel and urinary stones, gall stones, salivary stones, and bowel stones or concretions.

Urinary Stones.—When large quantities of very minute stones, no larger than fine sand, pass from the kidneys to the bladder, and are voided with the urine, the animal is said to have *gravel.* When, instead of large quantities of small stones, we find one, two, up to eight or ten stones, varying in size from a hazel nut to a turkey's egg, the animal is said to have *stone.* Usually, when it is *stone* and not *gravel*, only one large stone is present. *Stone* and *gravel* are only different sizes of the same thing, but give rise to very different symptoms: 1, according to the part they form in first; 2, according to their size; 3, according to their movements. Thus, if a stone form in the hollow of the kidney, the secretion of urine on its way from the kidney to the bladder tends to float the stone on with it, through the sensitive narrow excretory ducts which convey the urine from the kidneys to the bladder (ureters), and this lances and irritates these sensitive ducts, and gives rise to the most fearful agony (named renal colic) which the animal body can experience. Under such circumstances, a stone is said to be passing, and the horse rolls about in agony, perspiration steaming out of him. Whilst the stone remains in the hollow of the kidney, fits of colic come on, through repeated attempts of the stone to pass into the ureter. When once the stone has reached the bladder it is either voided with the urine, or remains there, and gives rise to distinct symptoms, such as pain after passing water—through the bladder squeezing out, so to speak, all its contents, then squeezing the stone, which cuts and hurts it. Sometimes a few drops of blood pass at the end of micturition. The horse loses condition, and goes, especially in the trot, indescribably carefully, and needs much urging. The suspicion can be verified easily by an examination per rectum, and feeling the stone, which, if present, has to be crushed and taken out when over a certain size.

Gall Stones are hardly ever met with in horses, as in the human family, from the fact of the horse having no gall bladder

wherein the bile can rest and get hardened. **Gall stones**, as in man, form very occasionally in the ducts of the liver itself, and pass, in the horse, with no distinctive symptoms, into the intestines, there to form a nucleus around which various substances, naturally found in the bowel, get deposited, forming hard concretions, as large sometimes as cricket-balls or larger, and are voided with the dung and picked up by stablemen and handed over as curiosities.

Salivary Stones form like renal stones in the salivary glands, usually the parotid, whose excretory duct ends in the lining of the mouth, opposite the third upper molar. These stones give rise to no very distinguishing symptoms, and either drop out of the mouth of the duct, along which they travel, or ulcerate their way out along any part of the course of the duct; so that when first a lump, then an opening, forms about the jaws or face, salivary stones are among one of the things which must be thought of as probable causes.

CAPPED ELBOW.—This is an enlargement or cap which appears on the elbow, formed by repeated crushing and bruising of the soft parts between the elbow point and the heel of the shoe in the act of lying down. When the evil is first noticed a thick pad must fall over the heel, hanging apron-like, by being strapped with a leather thong round the pastern whenever the horse is expected to lie down. When once formed, it is to be treated as a bruise (*see* BRUISES); and when large and incapable of reduction by other means, it has to be dissected out if treated.

Capped Hock is of exactly the same nature as capped elbow, but arises from kicking, usually in the stall, against hard substances. When it occurs in mares, it may be done during the periods of œstrum, and indicate nothing more; but it may, even in mares, indicate the vice of kicking. Both capped

elbow and capped hock much deteriorate their wearers, from the above considerations.

Capped Knee, of the same nature as capped elbow and hock, mostly arises from bumping timber whilst leaping, but very often indeed arises from a thorn lodging in the knee, also caught in leaping. If from the latter cause, the thorn generally lodges quietly, until sought for and removed by the penknife; at other times, its presence irritates the tissues in which it lodges, and gives rise to the secretion of pus (matter), that floats it out by ulceration. Anyway, it is always well to look and feel diligently for a thorn when the knee is capped from any cause whatever.

CATARACT.—This term is applied to opacity of the lens of the eye. In the great majority of cases this opacity is confined to the lens substance, the capsule of the lens (investing membrane) remaining transparent.

Causes.—Whatever interferes with the due nutrition of the lens tends to produce cataract. 1. It comes on in old age from senile decay. 2. Some constitutional diseases which interfere with general nutrition induce it. 3. It may come on as a secondary consequence of other diseases of the eye, especially periodic ophthalmia. 4. Injuries, such as punctures of the lens; but, what is more common, falls on the head, as in hunting, may rend the capsule and let in the other humours of the eye, when cataract forms at once.

Symptoms.—The whole lens being affected, the pupil of the eye, instead of appearing black, has a dirty-white appearance. The cataract, however, may be so small that only the professional man with his ophthalmoscope can discover it.

Note.—The end of the optic nerve is seen in sound eyes, and has to be distinguished from cataract, which it in no way resembles, except to the very careless observer.

Treatment.—Removal of lens by operation, or other procedure quite beyond the amateur.

CATARRH—COLD—CORYZA.—These names, especially the middle one, are applied to an inflammation of the mucous membrane (lining membrane which secretes mucus) of the nose and air passages of the head only, though really custom only warrants this restriction, as it is equally correct to speak of bronchial catarrh, aural catarrh, intestinal catarrh, and so forth.

Symptoms.—Profuse discharge from both nostrils and both eyes; great dulness; sore throat; moist, soft-blowing cough; pulse slightly accelerated, and very soft and compressible; temperature up from 1° to 3° above the normal.

Treatment.—Place in a large, cool, well-ventilated loose box, and clothe warmly but lightly. Give the linseed oil laxative draught, F. xiv.; give soft food and gruel, on account of the sore throat and difficulty in swallowing. In summer give green food—all food had better be placed near the ground, or upon it, as the discharge gets better away from the nostrils—in small quantities, taking care to remove such as contains much discharge; sponge the face, and especially the nostrils, very frequently, so as to keep them as clear as possible of the discharge; rub the upper part of the throat, commencing at the root of the ears and keeping well to the margin of the lower jaw, and then a foot or so down the neck, with F. xlviii. once or twice a day, which will fetch off the hair, but this cannot be helped. To avoid this latter result, some prefer to apply mustard to the throat, washing off the mustard the moment it becomes dry (in half an hour or so); but the author prefers the hartshorn and oil, as above. These catarrhs are almost confined to the summer or late spring and last a fortnight or more, but need no further medicine till after the fever has gone, when a dram of dilute nitro-muriatic acid

may be placed in the drinking water three times a day. If the legs swell, a diuretic ball (F. xxiii.) may be given occasionally

CATARRHAL FEVER.—*See* INFLUENZA.

CHAPPED HEELS.—When the skin of the heels is cracked across at the part where flexion occurs at the back and under side of the pasterns and in the hollow of the heels, this condition is called chapped or cracked heels; and, although a simple thing in itself, may prove very troublesome and give rise to pain and some little feverishness, and thus prevent work. In coarse-bred horses, and such as have much hair about their legs, the affection is common and troublesome. Wet, mud, neglect of cleanliness, too much corn, especially beans, too little work, even good keep in some horses, will give rise to it.

Treatment.—If very bad, it is most economical to give a cathartic (F. xii.), and feed on lowered diet, withholding hard corn. If the skin be hot and tender, and oozes a sticky secretion, cathartics are indispensable. Apply no astringents to stop the discharge till the cathartic has operated, but rather place in leg-tub and foment, or apply large wet yeast poultices for forty-eight hours, changing them night and morning. When the physic has operated, and the animal's diet has been lowered, and the skin of the heels rendered cooler—still keeping to low diet—we now easily stop the discharge permanently, by using an ordinary zinc lotion (F. lv.) or styptic colloid.

Note.—In all affections whatever of the legs, where the skin is broken, the ground on which the horse stands must be kept free from his evacuations, and as *dry* and *warm* as possible. To cure skin affections of the heels with the horse standing in his evacuations is impossible. Remove evacuations at once; sweep the ground clean, and scatter hot, dry sand—made hot in an oven—about the parts at least three times a day. A *warm, dry* atmosphere is invaluable in the treatment of all open sores whatever, where dressings are not kept applied to

the sores. Again, to stop a discharge of an inflamed part is like an engineer screwing down the safety-valve of his boiler, and causes inflammation of adjoining parts and fever; so that we must first cool the part and reduce the inflammation, and the discharge either ceases or changes to a thinner and less acrid character, and may be easily and safely arrested with a zinc lotion.

CHOKING.—When a horse has been running out at grass for some time and is then suddenly given dry hay and oats, the first mouthful reaches the stomach with difficulty, the second sticks at the end of the gullet next the stomach, then the third places itself on the second, the fourth on the third, and so on till alarm and uneasiness seize the horse and he ceases eating. Usually, the gullet is jammed to more than half its distance, and the swelling appears on the left side, extending half up the neck. Another form of choking arises from attempting to swallow over-large objects, or sharp objects which pierce the walls of the gullet. Grooms, some of them, think eggs given whole make the coat shine; hence, it is not uncommon to find a horse choked with an egg. Then, again, they sometimes give boluses on their own account of extraordinary size.

Symptoms.—These are only too obvious, except when the gullet is not filled high enough to be seen. The horse here hangs his head, and everything—his saliva, water, etc.—he ought to swallow returns by the mouth or nostrils, and the appearance of horror and anxiety in his face are very characteristic.

Treatment.—This is very diverse, and entirely depends on the way the gullet is blocked. If a whole egg be sticking in the gullet and it can be grasped, run a stout darning needle through the skin and gullet, and break up the egg. If a bolus be the cause, introduce a probang, after well larding it, and gently push the bolus towards the stomach. Eggs also may be thus dealt with. Anything sharp sticking in the gullet must

be caught by linen, loosely tied over the end of the probang. The first form of choking is frightfully fatal, and is only made worse by ramming with a probang. It may be overcome, however, thus:—Get a piece of tubing three yards long, with an inside diameter of half-an-inch, and anoint this well with lard, and introduce this as a probang gently down the gullet until the obstruction arrests it. Now fit a funnel into the end outside, and—standing on a wall or steps—elevate this well above the horse's head, and pour water down it till full; then lower the tube till the water returns, bearing oats or other particles with it. Repeat this scores of times, till all the particles are re-

PROBANG.

moved. Patience and this method are very effectual, and will save life when other methods have failed.

It is important to remember that the lining of the gullet swells and inflames after a choke, and arrests every kind of food that is not of a liquid or sloppy nature; therefore only thin, sloppy food must be given for at least ten days afterwards.

CHOREA (from the Greek word *choreia*, meaning dancing or jumping) is usually known as "Saint Vitus's dance" in this country, and affects girls from six to sixteen years of age; it also shows itself in dogs and cats, as in the human subject, by twitchings and jerkings of voluntary muscles of the face and limbs, usually of the left side. In horses, the twitching and jerking are almost confined to one part, usually the left (near) hind leg. This goes under the name of "string-halt," for which there is neither cure nor palliation.

CLAP.—*See* BALANITIS.

COLIC—FRET—GRIPES.—These terms are employed either to spasm of the bowels, or to excessive flatulency, giving rise to great pain. The reader should first master the few words under the head of BOWEL DISEASES, if he should be so unfortunate as to be obliged to treat these rapidly fatal disorders without professional assistance. They occur so suddenly that a few words here, as to their nature and treatment, will be of service to many; but all are here warned to get advice at once when a "fit" of colic shows itself. The custom of giving a "gripe draught," then waiting an hour before sending for help, is very fatal and costly in the end, though, by so-called *luck*, a case now and then may be checked by the "gripe draught." Custom alone warrants veterinarians limiting the term colic to the two disorders, spasm and flatulency; for really colic is only a symptom, a manifestation of pain in the abdomen, which may be from *various* disorders, such as are enumerated in the short article on BOWEL DISEASES. Before treating colic, then, it is necessary to know what kind of colic we have to deal with, or rather what is the nature of the conditions which are giving rise to the colic. The following table will enable us to distinguish the very diverse conditions giving rise to colicky pain, which we preface by a few words on—

Manifestation of Pain.—*Whenever a horse lies down, although he lie quiet, after appearing uneasy and refusing to eat, he must be regarded as showing colicky pains.* Cases are common of horses lying almost constantly for a week, never knocking violently about once, and dying at the finish of bowel disease—usually obstruction. Therefore, *do not think that because a horse lies quietly under unusual circumstances, that he is not in imminent danger.* Many a painful lesson has been taught by being ignorant of the above warning, or not heeding it. Quietness whilst lying down is no criterion. Usually, of course, the horse in colic knocks about, kicks his abdomen, looks back at his flanks, drops down and rolls fran-

tically about. When, therefore, colicky pain is mentioned in this place, we mean it in either of its manifestations.

DISORDERS WITH COLICKY PAIN.

	Spasm of the bowels.	Enteritis, or inflammation of the bowels.	Obstruction.	Intussusception.	Flatulent colic.	Hernia.	Renal colic.
Pain.	Intermittent pain and quiet.	Constant.	Constant.	Constant and frantic.	Constant.	Constant.	Intermittent.
Pulse.	Natural during intervals of ease.	Quickened, and smaller than natural.	Natural, but slowly rises.	Quickened.	Somewhat accelerated.	Natural up to gangrene setting in.	Quickened during paroxysms.
Temperature.	Normal.	Higher by 2, 3, 4 deg., or more.	Normal, but slowly rises.	Normal, but quickly rises.	Normal, but rises if disease do not stop.	Normal, but rises if gangrene take place.	Normal.

NOTES ON THE PAIN, PULSE, DISTENSION, AND TEMPERATURE.

Pain.—As a rule, all colicky pain arising from bowel disease is more intense when the small bowels are affected than when the large only are involved. The most frantic pain of all occurs in spasm of the bowels during a paroxysm, and in intussusception and gut tie. Spasm and intussusception are distinguished by the pain in the former being intermittent, in the latter constant. The *manner* of lying down should be noticed. In spasm, and in tympanitic colic, the horse drops (for pressure on his abdomen gives relief); in inflammation, all pressure causes pain, so that he lies down with more caution. In obstruction the lying is often the only symptom till the temperature begins to rise through commencing inflammation. The lying and rolling may not be violent unless inflammation is setting in. Flatulent colic gives rise to violent dropping down and rolling. Hernia gives rise to wandering about, as if seeking relief, lying quietly down, and repeating these acts, the pain being constant. Renal colic pain

is distinguished by arching of the loins, frequent attempts at micturition (staling), passing small quantities of urine often, with or without lying down, generally the former.

Pulse.—When this is 60, or under, the following conditions may be present: spasm, obstruction, flatulent colic, hernia, renal colic, that have not gone on to inflammation. A pulse above 60, and below 80, indicates the margin between the disorder, as such, and the setting in of inflammation, except during the paroxysms of spasm of the bowels, when the pulse is accelerated for the time. A pulse over 80 will be accompanied by heightened temperature also, showing inflammation to have set in.

Distension.—This is somewhat worthless as a symptom. Even in so-called flatulent colic the distension is but a symptom, but is a potent cause of pain.

Temperature.—The clinical thermometer is to be used every half-hour in the above affections, and as the rectum is often encroached upon by enemas, which cause its temperature to vary very much indeed, we must take all observations at the mouth. The temperature rising alters our treatment entirely, or ought to do; also our hopes of the case.

The treatment of each of the above affections will be found under its heading, alphabetically.

COLDS.—*See* CATARRH.

CORYZA.—*See* CATARRH.

CONGESTION.—In the first stages of an inflammation the smallest blood-vessels of a part—some of them too minute even to be seen in health—dilate, and a larger volume of blood goes through them; therefore, the part itself has more blood in it. This is called *active* congestion, and is the borderland between health and inflammation. When a part which should admit or transmit blood gets blocked up, the blood-

vessels leading to the part cannot deliver their load, and have to hold the blood, which remains almost stagnant, till the obstruction is overcome. This is called *passive* congestion. In holding it too long, the watery parts of the blood may filter through the vessel (veins) into the surrounding tissue, then dropsy is said to be present, the swelling leaving a pit on being pressed with the finger-end, called "pitting on pressure."

CONSTIPATION.—This is the name given to too hard a condition of the stools, and difficulty in ridding them after retaining them longer than natural. It must, however, not be confounded with obstruction.

Treatment.—Occasional bran-mashes at night, or bran with linseed that has been well boiled; turnip, carrot, and malt mashes are all indicated. More water also is to be allowed. On no account must medicinal laxatives be given to overcome constipation, unless obstruction threaten.

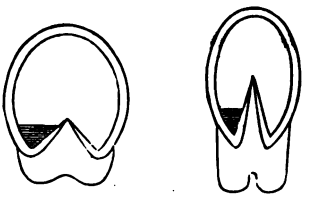
CONTRACTION.—By contraction a horseman means a lateral shrinking of the horny part of the foot its whole length. As there is no cure for it, the ailment will not be dwelt upon here. It may, however, be remarked that dark, chestnut-coloured horses are said to be most liable to this grave defect. Any undue favouring and resting of a foot will induce the defect; hence, it often accompanies navicular disease, corns, and painful affections of the foot of long standing.

CORNS.—The sensitive part of the sole between the bar and the wall of the hoof, under certain well-known circumstances, such as contraction of the foot, is liable to be unduly pressed upon; and this pressure causes a bruise of a chronic nature. The only similarity between human and equine "corns" is the cause of each being the same; they are unlike in all other particulars.

Symptoms.—Limping lameness. If the shoe be removed,

and the foot searched with a searcher, the dark-red, ecchymosed patch is seen between the bar and wall, in the corner or angle formed by these parts. (*See* diagram.)

Treatment.—Pare well out; place in a loose box; give a cathartic (F. xii.), and lowered diet; touch the corn daily



Diagrams showing a Sound and a Contracted Foot, and the seat of Corn in each.

with a glass brush, dipped in fuming nitric acid, afterwards place the foot in a bran poultice. With care, the corn can be taken quite away by these means. In shoeing afterwards keep the wall of the hoof well open at this part.

COUGHS.—A cough is a symptom of many and very diverse forms of disease, resembling colic in this respect. A cough, as such, is only *forced* expiration. When men or horses breath, air is taken into the chest (inspired) by *muscular* expansion of the cavity called the chest (thorax); the air is then expelled (expired) by the *elasticity* of the lungs and chest walls. In other words, inspiration is *active*, and caused by muscular effort; whilst expiration is *passive* only, and due to the *elasticity* of the lungs and chest walls. When, therefore, expiration is active (forced), it is short and violent, accompanied by a sound which varies in tone according to the cause of the cough. Thus, we have the low, soft, blowing, moist cough of catarrh, with sore throat; the higher toned hard, dry, hacking cough of the spring, during the prevalence of east winds; the ringing, hollow, sepulchral cough of asthma ("broken-winded" cough, as it is called), and so forth.

Causes.—All coughs are due to some irritant, which may be present from various causes. Thus, cold air passing over a tender, inflamed, or congested throat, acts as an irritant, and causes cough. Medicine, or any liquid that has been poured on the lungs, sets up cough, from irritating the bronchial tubes; a morsel of food "the wrong way" acts violently as an irritant, and sets up cough of a moist, urgent nature; lung and heart affections act as irritants, and often cause cough. Again, irritants, as far back as the stomach or bowels, such as bots, worms, &c., give rise to cough. Irritants situated far forward are also potent, such as teething.

It follows, therefore, that to cure a cough you must be able to *find the irritant* that gives rise to the phenomenon, and remove it; the former is sometimes difficult, whilst, in many cases, the latter is impossible. The causes and treatment of irritants giving rise to cough will be found under their respective headings, alphabetically.

CRACKED HEELS.—*See* CHAPPED HEELS.

CURBS.—This word is most likely a corruption of the word *curve*, because in sound hind limbs, well formed, the border of the leg from the point of the hock to the fetlock, viewed from the side, is quite straight; whereas, when curbs are present, a curved appearance is given to it, especially in its upper third. Curb arises from sprain of the calcaneo-cuboid ligament at the back of the hock, in the following way:—When the toe is on the ground, and the limb bearing its share of the weight of the body, the foot is the *fulcrum* of a lever; the point of the hock is the part to which the *power* of the lever is applied, and the *weight* of the lever (which is the body of the horse) is transmitted down the bone which extends from the stifle to the hock joint; therefore, if, in the mind's eye, we draw a line down this bone, we find the line passes

through the curb place in a bent hock—and bent hocks, although they may have no curb, are often called curby hocks—but below the curb place in straighter, better formed hind legs. Exactly the same arrangement obtains in ourselves, and young mill-hands, standing for hours at the loom, become curby from the long standing inducing slight inflammatory softening of this calcaneo-cuboid ligament, when, if they are put to bed for six weeks, and the parts blistered once or twice, the arch of the foot, which has been half broken down, is restored.

Treatment.—This consists of throwing off all weight from the injured ligament; but as we cannot keep the horse lying, we lift the back of his leg, and so throw off the weight, by putting on a patten-shoe. After this, our proceedings must be exactly the same as those already described for sprained back sinews. (*See* BACK SINEWS, sprain of.)

CUTTING.—*See* BRUSHING.

CYSTITIS.—Inflammation of the bladder is not very common in horses, but in mares it may be brought on in the act of parturition, by the bladder being crushed, especially in prolonged labour, where the bladder has not been emptied before the passage of the foal.

Symptoms.—Heightened temperature, showing fever, and constant dribbling of urine.

Treatment.—Procure professional assistance, if possible; if not, give a cathartic (F. xiii.), bran-mashes, plenty of thin, cold linseed tea, and barley water, for a week or ten days, along with laxatives and F. iii., till the fever abates. Of course, a large, well-ventilated loose box and suitable clothing are indicated.

Note.—Inflammation of the interior of cavities, which have an outlet by which inflammatory products can escape, are never quite so beyond the amateur's treatment as inflammation of

shut sacs, such as the pleura and peritoneum (*see* INFLAMMATION), where the inflammatory products lodge, and may undergo all kinds of changes, to putrefaction itself.

DEFECTS OF RESPIRATION.—Every horseman has a good idea of the ordinary breath sounds in the horse, both during rest and under brisk exercise, so that these will not be dwelt upon here. The respiratory sounds no sound horse has, alphabetically arranged, are: grunting, high blowing, piping, roaring, snoring, trumpeting, wheezing, and whistling.

All these sounds are symptoms of irremediable defects in important organs, and therefore their discussion here would be out of place.

DENTITION.—Although cutting of the teeth, as it is called, is quite a natural thing, it may go wrong in several ways. In foals the milk teeth may push their way to the surface too slowly, when a slight lancing of the gum, where the tooth is quite ready to burst through it and fails to do so, is of much service. Teeth are apt to push each other out of position, and when this is the case, the tooth pushed out of place may be extracted, which is easily effected, often with no further aid than the fingers. During second dentition or change of teeth, the permanent teeth grow and push out the milk ones. Here the milk tooth may offer sufficient resistance to divert the permanent tooth from its proper course. This should be at once rectified, and the milk tooth extracted, however firm in the jaw it may be. A small tooth often survives in front of, and touching the nearest upper molars, called a "wolf tooth," which carters clamour to have extracted—a thing easily accomplished. Lampas, so called from the red appearance of the part, from the Greek *lampas*, a torch, is an active congestion, which, however, never proceeds beyond that condition, of the upper gum and palate, immediately behind the upper incisor teeth. This, cer-

tainly hinders a horse from using his teeth on hard substances, from the pain and tenderness accompanying it; and it is a much disputed point whether it is not a quicker cure to burn them out, or to leave them in and treat the case by a purgative, low diet, and ten days' rest. If the condition (lampas) were the only one present, there can be no question that burning out would be the quickest and in every way the best method, just as we would remove a wart in the way of the harness; but it so happens that the lampas is not one-half of the derangement: the whole mouth is affected from the changes taking place, so that cathartics, soft food, and ten days' rest are required to clear up the whole. The burning out, therefore, is as short-sighted a practice as it is unscientific; for when the lampas is removed, the remaining tenderness—not to speak of the soreness left by the burning—in the gums has still to subside. A horse worked during this period loses condition, and grows weaker for the time.

DIARRHŒA.—By this term is meant over-purging, or purging that has not been designed; and consists of the frequent passage of watery stools, mostly of a painless character.

Causes.—Acrid matter in the intestines; over-succulent food; too much water; change of dry to succulent food; working in the hot sun; mental excitement, as seen at the covert side; an over-draught of cold water whilst heated.

Treatment.—As the bowel movements are very active during waking hours, and still more so during exertion, whilst during rest, and especially during sleep, their movements are least, our first care is to remove to a large, well-ventilated loose box, to darken it, and keep the horse as somnolent as possible, clothing according to season. Withhold all coarse succulent food, such as the green food of summer; give small quantities of good sound hay, well made gruel, small malt mashes, mixed

with a handful of oats only. Give F. xvi., which hardly ever fails to arrest the diarrhœa.

Note.—Some horses, called "washy," are subject to repeated attacks of diarrhœa. In them the bowels are over sensitive, and they are extremely difficult to keep in condition. Dieting is the only thing for them.

DIFFICULT LABOUR.—*See* PARTURITION.

DIURESIS.—Called also Diabetes Insipidus, is a condition in which an excessive quantity of pale, limpid urine is secreted, free from sugar or other abnormal ingredient. We induce it artificially by medicines termed diuretics, when, however, it subsides in a few hours, unlike diuresis proper, which lasts for days or weeks.

Symptoms.—Frequent passage of large quantities of pale urine; great thirst; loss of flesh and strength; impaired appetite. Sometimes dropsy sets in.

Causes.—Kiln-dried oats; charred and musty hay, and various defective foods will induce it, by simple diuretic action, so to speak; that is, they irritate the kidneys like the resin, juniper, &c., of diuretic boluses. It often, however, depends upon no such apparent causes, but arises from some defect of the animal economy quite undiscoverable; and when this is so, it is rarely that we can even ameliorate the disorder.

Treatment.—Withhold suspected food or water. Select the choicest hay and oats; boil all the water the animal drinks, taking care not to withhold it, as the thirst is so urgent that active fever would soon set in and terminate existence. If from an undiscoverable cause, try iodide of potassium, in dram doses three times a day, given dissolved in the drinking water. If after four days this should fail, give an ounce of solution of perchloride of iron, in a pint of water night and morning, and continue this for at least ten days, or until improvement

commences. We must not be too sanguine in any cases save those having the most apparent causes.

DROPSY.—This is an accumulation of watery or serous liquid in some one or more of the natural serous cavities of the body, or in the meshes of the tissues, or in both, often occurring independently of inflammation.

When this liquid accumulates in the skull, it is called *hydrocephalus;* in the chest, *hydrothorax;* in the abdomen, *ascites;* in the sac which contains the heart, *hydropericardium;* in the sac containing the testicle, *hydrocele;* in the legs, "filled legs;" when very general over the body, *anasarca;* when quite localised and not extensive, such as about the sheath or eyelids, we have no particular name for it.

Causes.—When unaccompanied by inflammation, the dropsical state is brought on by the veins and their radicles being unable to empty themselves into their proper cavities, when the blood they hold distends their walls, whilst the more watery portion of the blood filters through into the surrounding space or spaces. The obstacles to the return of venous blood are valvular or other disease of the heart, pulmonary emphysema, bronchitis, structural disease of the liver blocking the portal system of veins, the pressure of tumours on veins, &c. Again, it may arise from impaired action of the kidneys. Lastly, it may be that the blood is so poor and thin, as in anæmia, that it filters through the coats of the vessels.

Treatment.—Remove or relieve the diseased condition of which dropsy is a symptom. Use diuretics judiciously, and when the disorder arises from anæmia, treat the case as directed in that complaint. Dropsies of large serous cavities, such as hydrocephalus, hydrothorax, ascites, &c., are beyond the scope of this work. Small local dropsies are easily removed by diuretics, exercise, and careful feeding.

Filled Legs.—In the autumn the blood is apt to get

thin, and the circulation generally languid, when the legs—usually the hind ones, on account of their being the furthest away from the central organ of circulation, and being besides dependent—become dropsical. Half an hour's exercise disperses this form of dropsy, to return when the horse comes to stand again. The coat is undergoing change, and the general tone of the whole system is lower. The horse sooner perspires and becomes distressed, and otherwise shows that he is not up to the mark; so that "filled legs" is only one of the symptoms.

Treatment.—Gentle exercise; good grooming; good hay and oats; a diuretic bolus (F. xxiii.) every other night; half a dram of citrate of iron and ammonia three times a day, either dissolved in the drinking water or sprinkled on the corn.

DYSENTERY.—This disease is less often seen in horses than in cattle; however, it does occur in horses, and may, in practice, be regarded as an aggravated and prolonged diarrhœa. Possibly the large intestines are oftener involved than the small.

Treatment.—The same treatment exactly as in diarrhœa, with the following additions:—The purging still continuing, both medicine by the mouth and by enema must be given Give F. x. every three hours. Also give an enema three times a day of cold starch gruel, having two ounces of laudanum in it. Give no warm food or drink, and let everything given be as dry as possible. Should these measures not suffice, make two strong bags, long enough to reach from the withers to the croup, and wide enough to admit a cricket ball, or rather larger; fill these with ice, and apply to the spine lengthwise for an hour three times a day. Should these powerful remedies fail, the disorder may be regarded as caused by radical inward changes admitting of no alleviation.

DYSPEPSIA, OR INDIGESTION.—This may be from very different causes, some of them of a fatal nature. As a symptom, dyspepsia points often to kidney disease, heart disease, brain disease, and so forth; in this place, however, we limit the term to disorder of the stomach and liver.

Symptoms.—Licking cold substances; especially fond of licking whitewashed walls; flatulency, and perspiring on slight exertion. This gastric disorder often gives rise to crib-biting and wind-sucking, which again keep up and greatly aggravate dyspepsia.

Treatment.—The proper regulation of food and feeding is essential, such as quantity and quality of food, and punctuality in meal times, remembering that long fasting and too frequent and heavy feeding are fruitful sources of simple uncomplicated dyspepsia. In the way of drugs, the true principle is *to give an alkali before meals, and an acid after meals.* Thus, give two drams of bicarbonate of soda in the drinking water three times a day before a meal, and two drams of dilute nitro-muriatic acid in a few go-downs of water immediately after eating, when the soda has been given before the meal.

DYSURIA.—This is a painful discharge of frequent, small quantities of urine, and may arise from stone in the bladder, congestion or chronic inflammation of the bladder, especially about its neck, or from altered composition in the urine; balanitis that has spread up the urethra, indeed all irritants, must be searched for, also all conditions rendering the parts unduly sensitive.

Treatment.—For chronic inflammation of the bladder, *see* CYSTITIS.

ECTROPION.—This term is applied to an eversion of the eyelids, rare in the horse, and too complicated in its treatment for discussion here.

ECZEMA.—This is a very common form of skin disease in the horse, and although not dangerous to life, the treatment of it in its varied aspects almost defies the utmost skill in many cases, and entirely does so in not a few; so that, especially as it is a progressive disorder, we hardly feel justified in writing anything which may cause the amateur to meddle with the affection. With this warning we will say a few words on its nature and treatment for the good of those who are not within reach of competent advice. Eczema is an eruption characterised by: (1) infiltration and thickening of the skin, (2) exudation upon the thickened skin, (3) followed by drying and formation of crusts. The whole is accompanied by intolerable itching. The minute bladders (vesicles) which form—very often in successive crops—may either contain serum or thick pus. In the former case, the neck and shoulders are the sites most involved; also, the skin of the tail, from which the hair departs, which gives the tail the appearance of the tail of a rat; hence it is called "rat-tail." The skin of parts flexed, like that in the hollow of the heel, that behind the knee, and that in front of the hock-joint, is often the seat of this form of the affection. The *pustular* form attacks the skin of the legs, and is then called "grease."

Treatment.—The digestive organs are to receive our first attention. All food must be light, and easy of digestion. The harness worn, and brushes, etc. used for the affected must not be used for those not affected. All parts must be washed night and morning with soap, washing soda, etc., then dried. Parts capable of being poulticed should be poulticed with bran, and fresh brewers' yeast. Should the skin be hot and thickened, after a cathartic has been given, we must rely on mercury internally and externally to remove the thickening. Give a scruple of calomel on the tongue three times a day, for three or four days, or more, omitting it or modifying the dose if either tenderness of the gums, or purging set in. Black-wash

is to be used (F. liv.) at the same time to the parts kept clean by the means above described. In mallenders, salenders, and chapped heels from eczema, the ordinary strong mercurial ointment (F. lix.) is efficient, applied by rubbing in a little piece the size of a horse-bean, night and morning, with the end of one finger. The tail also may be thus rubbed, with a rather larger quantity of the ointment. Mercury, as an outward application in these forms of skin affections, arrests the itching at once, as if by magic. In "grease," large warty growths are apt to form, which require removing by firing off. Professor Williams fires these off with two blacksmiths' fire shovels, the one red hot to cut with, the other cold to shield the skin. Dryness and warmth, and strictest cleanliness, are essential. The return to stimulating food, such as oats, must be very gradual. A simple laxative twice a week (F. xviii.) is also of use, even after urgency seems to be past.

ENTERITIS.—This term signifies inflammation of the bowels, a disease rapidly fatal and most difficult to treat even by experts. For the good of those who have to treat it as amateurs, we give a brief outline of the main lines of treatment.

Causes.—The most common cause of enteritis by far is some disorder of the bowels, such as spasms or gripes, flatulent colic, intussusception, obstruction, etc., which has gone on without yielding to treatment, and terminated in inflammation. *Therefore, in all bowel affections that are liable to go on to inflammation*—and few are not—*take the temperature several times a day, so as to be ready with antiphlogistic measures at the outset of the inflammation.* Another precaution is, to take the temperature always at the mouth, as the rectum is interfered with by enemas, which may destroy the utility of the thermometric reading.

Symptoms.—When a bowel disease is terminating in inflam-

mation the temperature rises, the pulse gets beyond 80, usually between this and 130, and less full in volume. The animal's countenance is distorted by pain, and this is accompanied by perspiration. The pain also is constant, and the poor creature can find ease nowhere, and in no position. Lying down now has to be done more cautiously, as pressure to the abdomen is painful. If the disease goes on, delirium sets in, and the horse beats his head and various parts with seeming indifference, till patches of raw hide make their appearance, mostly about the head. If no arrest of the symptoms takes place, the pulse gets beyond 160, thready, and uncountable; the delirium and indifference to surrounding objects becomes more pertinacious, the movements more and more indifferent to knocks and bruises, till at last the horse drops, and a few convulsive struggles end the heart-rending scene.

Treatment.—Whether we have succeeded in opening the bowels by our previous treatment or not, our very first duty is to abstract blood from a free opening in the jugular (*see* BLEEDING), and follow this at once by a full opiate, remembering that we must arrest the movements of the bowels for the same reasons we arrest the movements of any other inflamed parts. Two ounces of tincture of opium must be given every twelve hours, for at least four days, should the case live. Each dose may be given in a little warm linseed tea. A copious enema of soap and water is to be given after the bleeding and opiate, which must be repeated every six hours, in order to keep the rectum unloaded. The most important treatment almost of all is *efficient* fomentation of the abdomen. Earnestness and perseverance are required to foment so large an area as the horse's abdomen efficiently (*see* FOMENTATIONS); because if the cloths are applied half-cold, indeed if they are not steaming hot, they will be worse than none at all, as the animal is exposed to the cold air. A large copper must be lighted and kept boiling; a tub also must be placed in a convenient corner

of the stable that will hold some gallons. For flannels, blankets must be used, and care must be taken to wring out every drop of the water, also that the air does not cause a chill in changing the cloths. No noise at all, still less laughter and mirth, should be tolerated in the presence of such fearful suffering, if for no other reason. The fomentation must be kept up one hour after another by fresh relays of earnest, strong men, for, if need be, thirty-six hours. Thirty-six hours is here stated, as the time the author has found this treatment requisite in a large number of cases; it is the time a well-attacked inflammation begins to yield, or at least that effusion commences. Gruel that has been well boiled should be given every three hours, and if the horse will not drink it, then it must be administered like an ordinary medicinal draught, and in sufficient quantities—four or five pints—each time. Of all ailments, the blood degenerates quicker in enteritis than in any other, and therefore requires nourishing, or exhaustion follows. After forty-eight hours have been got over, if the exhaustion be great, whatever the temperature, brandy in four-ounce doses, along with well made beef tea, must be given every four hours, night and day. The return of the bowel action is to be looked for in from five to eight days in cases which do well, and immediately they begin to act, the horse needs the very greatest care in regard to diet and nursing. (*See* NURSING SICK HORSES.)

ENTOZOA.—This term is derived from the two Greek words *entos*, within, and *zoon*, an animal; in other words it means, *animals within*. The parasites which infest the horse as well as the other domestic animals are very numerous, but in a practical point of view they are regarded as three in number—namely, bots, round worms, and thread or whip worms.

Bots.—These pests are the progeny of the gadfly (*œstrus*

equi), which hovers around horses while out at grass in summer, and alights and deposits its eggs on the hair of the horse, especially about the shoulders and fore legs. The horse licks off the eggs, which are stuck with a glutinous matter, and swallows them, when the larvæ stick to the coats of the stomach, and are known as bots. These ultimately release their grasp and pass out of the animal, but during the few months they remain they often impair digestion and appetite, and give rise to much weakness.

Treatment.—Whenever a horse is running at grass, his skin should be scanned carefully once a day, and the eggs of these gadflies, if found, washed off with hot water and washing soda. As bots in the stomach, we can only guess at their presence by the horse having occasional diarrhœa, his appetite being capricious, and his losing flesh. Of course, if bots are passed with the dung we are sure of their presence, and may venture on giving medicines to remove them. The author knows of no medicine which can be really depended upon for this purpose, but in India a favourite bot medicine is alum in half-pound doses, given in water fasting, before breakfast, followed by a pint of castor oil at night, unless the alum itself has purged.

Round Worms are known to be present easily enough, as they come away, one or two now and then, with the dung. They are round and taper towards each end, dirty-white looking, and are about two or three inches long.

Treatment.—This is eminently satisfactory, as these worms abhor turpentine. Choose three full days during which the horse can be spared—from Saturday noon to Tuesday noon is a good time with many, as Sunday intervenes, and there is the Saturday half-holiday. From Saturday noon to Sunday morning give nothing except a very little hay—a mere handful. Then on Sunday morning at seven give F. iv., and keep absolutely fasting till two o'clock; then give a physic ball

(aloetic), remembering to give a dram less of aloes than you would had no oil been given; thus, if a horse require a six-dram ball at ordinary times, now give him five. At three or four o'clock a large bran-mash may be given, and the horse treated as he always must be while under physic. The physic sets by Monday night late or Tuesday morning, and work of a light nature may be resumed on Tuesday afternoon. This treatment is invariably successful, and large quantities of worms are brought away.

Thread Worms, sometimes called whip worms, inhabit the end gut (*rectum*), and are minute, dirty-white worms, like pieces of thread, which give rise to much itching and rubbing of the parts about the dock. A horse will turn his quarters half way in his stall, or in shafts, to rub against any hard object. They, however, are easily seen in the dung.

Treatment.—Dissolve twelve drams of F. xii. in a pint of boiling water, then add three pints of cold water to it, and give it very slowly as an enema, immediately after you have cleared out the parts by a copious injection of water, or soap and water. The aloetic injection must be given very slowly indeed, so as not to provoke its discharge too early; indeed, it is all the better for being retained for half an hour. Another excellent injection for thread worms is two ounces of the solution of the perchloride of iron in a quart of lime water (F. vii.) The iron shrivels up the worms and destroys them.

Note.—When worms, or bots, or other entozoa have long been present, a thickened, diseased condition of the lining or mucous membrane takes place, especially at the part in which they have lodged, which requires restoration. For this there is nothing better than half a dram of calomel on a bran-mash every third night till four doses have been given. The animal's water during this time to be impregnated with two drams of the solution of the perchloride of iron three times a day.

EPISTAXIS, OR BLEEDING AT THE NOSE.—This is a symptom whose cause requires discovering. This inquiry must proceed as follows :—*First*, ascertain whether the blood be venous or arterial. Venous blood is *darker*, and trickles slowly, without any appearance of jetting or jerking; arterial blood is *bright scarlet*, and flows in jets and jerks. *Second*, ascertain whether it be coming down both nostrils, or only one. If it come from both nostrils, it has its source behind the head; if from one nostril only, it has its source in the head, and most likely in the nostril down which it is coming.

Dark, venous blood coming down both nostrils (from a source behind the head) is most likely from the stomach. It may, however, be from the vessels of the head itself, on account of their being overcharged with venous blood, unable to regain the right chamber of the heart, either from a tight-fitting collar, which is pressing on the jugulars, or from disease of the heart itself, or from over-exertion, as in a "burst" after hounds. When venous blood comes from only one nostril, the chamber-walls of that nostril are most likely its source, and have either a polypus or ulcers on them.

Bright scarlet, frothy, arterial blood comes down *both* nostrils, and comes from the air passages and lungs. It is a very serious thing, and requires prompt treatment, and usually arises from over-exertion.

Treatment.—Generally speaking, all bleeding at the nose requires the removal of all tight-fitting clothing or gear, cold applied to the head and neck, and perfect quietude. The special measures are determined by the cause of the bleeding. If it be from the stomach, give iced water, and repeated draughts containing solution of the perchloride of iron in cold water, and give all food cold and in *very small quantities*, and often. Hay and oats may be discarded for a few days, to give place to flour gruel, raw eggs in milk, beef-tea, hay-tea, etc. If the collar has caused the bleeding, no treatment whatever is

required after the collar has been removed and altered. Heart disease the amateur cannot treat; but an over-taxed heart, as in over-exertion, may be treated at once by stopping all exertion, loosening everything tight about the horse, turning his face to the wind, and giving three or four go-downs of cold water. Blood from, and having its source in, one nostril is never troublesome, and seldom dangerous, except by repeated small bleedings. It may be stopped by dashing iced water over the head and sides of the neck, together with the rest and cool air so essential in all cases, from whatever cause.

Bright, scarlet, frothy, arterial blood from the lungs, requires active treatment. Pour iced water over the head, neck, and back, and give iced water to drink, and keep very quiet for some days. Professional aid is essential in this, and very desirable in all other cases, except, perhaps, where the collar has been too tight.

EXOSTOSES.—This term literally means *out of a bone*, in the singular, from *ex*, out of, and *osteon*, a bone. Bone springing out of bone we may call it here, provided we remember that during the time it is springing out it is softer than real bone, but gradually assumes all the physical characteristics of bone, including hardness, in a few weeks.

The chief exostoses of horses are named bone-spavins, ring-bones, and splints, all being the same thing under different names and situations only.

FALSE QUARTER.—This term cannot be explained without first explaining its cause. Between the termination of the skin and the commencement of the hoof there runs around the top of the foot a structure called the coronary band, from *corona*, a crown—that is, the crowning band. It is this band which secretes the horny fibres that grow downward to form the hoof. If, from injury, such as a tread from the opposite

foot, or a quittor, this coronary band gets removed or broken down, a soft, weak horn, the breadth of the injury, grows downward in place of the same breadth of sound, hard horn. It is this soft, weak part that gets the name of false quarter.

Treatment.—The amateur will scarcely be able to restore the integrity of the coronary band, which must be done before the false quarter can grow out. The shoe must not bear on the part, and the entire pastern must be twice blistered. The greatest ingenuity and a thorough knowledge of surgical pathology are required in restoring a false quarter.

FETLOCK JOINT DISLOCATED.—The cannon and long pastern bones occasionally get into a chronic state of displacement, by the surface of the former getting too forward and that of the latter too far back. The joint is then said to "knuckle over." There is no cure for it, because if replaced the ligaments would at once allow it to relapse into its old place the moment the foot was set down.

FETLOCK JOINT ENLARGED.—When, from bad shoeing, the bearing of the foot is thrown awry, or too much strain comes on the joint, as in the case of too long, oblique pasterns, the fetlock joint grows at the part where the extra stress comes so as to be able to meet the extra requirements of the part involved. It is exactly the same thing which occurs in the arm of the blacksmith from using it so freely, also in the thick horny skin of his hand, from contact with the hammer shaft. Consequently, we are not to attempt to remove the enlargement except by removing the cause, which cannot be done in the case where the pasterns are too long. When it occurs from bad shoeing, the bearing of the shoe must be made right, and the *need* for the enlargement goes and, of course, the enlargement with it. Sometimes, horses turn their toes in a good

deal; this throws the weight of the body on the outside of the fetlock joint, and this part enlarges.

FEVER.—As the state or condition of the body known as fever accompanies almost all severe illness, it has been thought advisable to treat it fully in the introduction. (*See* INTRODUCTION.)

FILLED LEGS.—*See* DROPS

FISTULA.—By this term is meant a *canal* unnaturally communicating with the secreting glands, or their ducts, or with mucous canals or cavities. As an illustration of the first set of fistulæ, we may take a wound of the cheek, cutting across the duct which conveys the saliva from the gland (parotid) that secretes it. In such a case, every time the horse eats, or thinks of food, saliva pours out of the wound in the cheek. Fistulæ of the latter description are more rare in horses, but are found after punctures made for the relief of flatulent colic, etc. The treatment of these fistulæ can only be successful when conducted under conditions too complicated for discussion here, such as paring the edges of the fistula and bringing them together by fine silver-wire sutures, etc.—a most difficult task, even to the professional man.

FISTULOUS WITHERS.—*See* SINUS.

FLATULENCY.—When, after eating, an abnormal quantity of gas accumulates in the alimentary canal, the animal is said to suffer from flatulence. The acute indigestion (of which this is a part) requires investigating, and its causes removing, when the flatulence after food ceases. However, as a passing, distressing *symptom*, we are often called upon to interfere.

Treatment.—This is best effected by—1, whisking the abdomen with hay or oat-straw; 2, hand-lead exercise; 3, warm

carminative drugs, (F. xxxiv.); 4, and enemas of soap and water, assafœtida, etc. First try what brisk friction to the abdomen and hand-lead exercise will effect. If in ten minutes the flatus does not subside, or pass off in the natural way, no further time is to be lost. We must give F. xvii. at once, but continue the friction. Prepare also and give an enema of hot soap and water, then clothe warmly and walk about once more. The case may go on to flatulent colic if the above means have not succeeded—most likely it will. (*See* FLATULENT COLIC.)

FLATULENT COLIC.—This term is applied to the pain and distension of the bowels—the latter more especially—with gases arising from decomposing or fermenting food. The foods most likely to ferment, after being swallowed, are those which by their soft, succulent nature dwell too short a time in the mouth to be thoroughly masticated and mixed with saliva. These reach the stomach rapidly in large quantities, not allowing this organ either to saturate them with its juices, or to toss and knead them about in its interior, and so turn them into the state called chyme before they are passed on to the bowels, there to ferment, give off gases which will distend the bowel, cause great pain, and arrest the movements of whatever bowel they so distend. The foods most often causing flatulent colic are boiled wheat, boiled potatoes, brewer's grains, green food, such as clover, tares, cut grass, etc.

Symptoms.—The abdomen becomes highly distended with the inflated bowels; the distension causing every other symptom, thus: *pain*, by distending, and thus unduly stretching, the bowel; *quick breathing*, by the inflated bowels encroaching upon the cavity of the chest, the diaphragm being rendered useless as an inspiratory muscle, so that the chest walls have to act in inspiration alone, hence the round barrel form of the chest during the attack; *frequent weak pulse*, through the heart and lungs being pressed upon; *anxious countenance*, through

the sense of suffocation; *cold blue mouth*, from the heart and lungs not being able to decarbonise the blood; *expulsions of flatus*, etc.

Treatment.—The sudden fatality in these cases brooks neither delay nor trifling. Flatulency is one thing; flatulent colic is practically another, and a very different thing, and he is in a pitiable plight who has not a trocar and canula. Waste no time in vainly endeavouring to give medicines that are said to check fermentation, and others that are said to absorb gases; they are delusions and snares. Without delay, carry a string tightly round the trunk of the body at the loins; now take this string and divide it into two equal parts; again, take

TROCAR AND CANULA.

one of these halves and divide it into three equal parts, and cut off and throw away the end third. The string is now a measure by which to insert the trocar and canula into the flank. Having dipped the trocar and canula separately into carbolised oil, place the trocar in the canula and get some one to hold one end of the string upon the spine, about the middle of the loins, not being too particular; now tighten the string, and hold the other end to the flank, as perpendicular as possible, and having cut through the skin at this part with a penknife, plunge the trocar and canula up to the hilt, and at once withdraw the trocar, leaving in the canula its whole depth. A piece of wire is to be used, to keep the canula from being blocked by food. The gas escapes with a rush, the bowels resume their action, and all goes well at once. There is *not the least risk* of setting up inflammation, except by using a dirty canula that has never been cleansed since being used, but has animal matter remaining on some part of it, generally the

inside. The relief to the animal is instant and telling, but the canula had better be held up to its hilt, and kept freely open for the next twelve hours by relays of reliable men. Tying it in must not be trusted. At the end of this time the canula is to be removed by being pulled out straight, and as rapidly as possible. The wound only requires to be kept clean.

FRACTURES.—As a rule, fractures of bones are by no means "simple ailments;" quite the contrary, owing to our inability to retain the ends of the bone fractured long enough together that they may "knit," or heal. We may, however, mention here that it is a wise plan, after a horse has received a blow upon any of the bones of his legs which causes him to go lame *in the least*, to place him at once in slings, and keep him there six weeks. The reason for such precaution is this:—Bone is bound round by a tough unyielding membrane called periosteum. This membrane is so strong and unyielding that a bone may be fractured and yet hold quite well in its place for days. Here is a case:—The author met a carriage containing the Bishop of L—— and his family driving out of Ripon. There were—including the driver—six persons in the carriage. This was at 4.30 p.m. At 6 p.m. a message came that a horse had broken its leg. The author went straight to the Unicorn Hotel, and found the horse he had met not two hours before with the left hind pastern fractured. The fracture had occurred after he had been let out of the shafts, and was on his way to the stable. The horse was at once shot, and a *post-mortem* examination revealed a fracture of the long pastern into six large pieces, and half a handful of pieces no larger than dust off the road. This horse, in standing back in his stall, ten days before, had been struck by the horse next him—the part showing only a paltry-looking scar, and the lameness being slight (*but still there was lameness*) after the first two or three days.

When fracture of an important bone takes place, and there is displacement, seek advice.

FRET.—This is one of the many terms of SPASM OF THE BOWELS, *which see.*

GALL STONES.—*See* CALCULI.

GATHERED NAILS.—This accident is of the same nature, and requires the same treatment, as Pricks in SHOEING, *which see.*

GLASS EYE.—This is a popular name for *amaurosis*, on account of the widely dilated pupil and fixed stare giving the animal's eye a glassy appearance. (*See* AMAUROSIS.)

GRANULATIONS.—When a part of the skin is ulcerated or "raw," it is apt to get covered over with what popularly goes by the name of "proud flesh." (*See* ULCERS.)

GREASE.—This term is the popular one for a form of eczema attacking the legs. We have already referred to it under this head, and have only to add that the pustules which form give rise to a thick, fœtid, greasy discharge, which no doubt has caused it to be called Grease. The warty growths, when they appear, are to be fired off in the way mentioned, and the legs poulticed with yeast and bran poultices. (*See* ECZEMA.)

GRIPES.—*See* SPASM OF THE BOWELS.

GRUBS.—*See* ACNE.

GRUNTING.—This is due to defect of the larynx, or voice-box, and is one of the noises made by so-called "roarers," the grunting often giving place to "roaring;" or it may cease for a time, and, no unusual noise being made, then "roaring" may take its place. A grunter is easily detected by being

placed against a wall and threatened with a stick. It is incurable.

GUTTA SERENA.—Another name for AMAUROSIS, *which see.*

HÆMATURIA.—When blood mingles and is passed with the urine, the horse is said to have hæmaturia. The blood may come either from the kidneys, the ureters (tubes which convey the urine from the kidneys into the bladder), the bladder, or the urethra.

If it come from the urethra, the first urine passed will be bloody, whilst all the rest is free from any blood colour. If from the bladder—*i.e.*, if the lining of the bladder supplies it—then the whole passed may be tinged, but the last few drops most deeply of any. If it come either from the ureters or kidneys, the urine is equally tinged throughout.

Treatment.—Place in a well-ventilated loose box; clothe according to season; give demulcent drink, such as linseed tea and barley water; withhold corn for a few days, and keep the animal perfectly quiet. This is all the amateur can do, and he had better seek professional aid at once if he suspects that the kidneys, ureters, or bladder are producing the blood.

HÆMOPTYSIS.—Roughly speaking, this term signifies bleeding from the lungs; but in reality the blood may come from the larynx, trachea or windpipe, bronchial tubes, or the air cells of the lungs. It is treated of in article EPISTAXIS.

Symptoms.—Bright scarlet, frothy blood comes down *both* nostrils.

Causes.—Too violent exertion, usually.

Treatment.—This is given under article EPISTAXIS.

HÆMORRHAGE.—This means an escape of blood simply. Many hæmorrhages have special names; thus, bleeding at the

nose (*epistaxis*), bleeding from the lungs (*hæmoptysis*), bleeding from the stomach (*hæmatemesis*), and so forth. But simple bleeding is called hæmorrhage wherever it occurs. Special hæmorrages are treated of under their proper heads. Horses are liable to dangerous hæmorrhages; but when these do occur, if the bleeding part can be strangled for a short time—that is, if a ligature can be applied between the bleeding part and

ARTERY FORCEPS.

the heart—we must do so. Suppose an artery in a leg were severed, we now should take a towel or piece of very thick soft rope, and tie it tightly round the limb between the bleeding part and the trunk, by first tying it loosely round the limb, and then twisting it tight, with the aid of a stout piece of stick. *Pressure* has to take the place of *ligation* in places not admitting of ligation, such as the head, neck, and trunk. Steady pressure with the finger for an hour will stop the hæmorrhage from a small vessel. When larger vessels are cut, the pressure must be more powerful, longer continued, and wider in area than in the case of a small vessel; so that the finger has to give place to a broader, longer, and altogether more powerful instrument, which must be extemporised for the occasion. *Styptics*, such as finely-powdered alum, all the better if dried in an oven, also styptic colloid, are to be used for large, clean cuts, where the bleeding is not so much from a large or small vessel as from several small vessels. Pressure here round the edges is useful and effectual where it can be applied. When a large pin can be passed beneath the vessel, and its point brought out beyond, and a little soft string twisted round it, as in the operation of pinning-up after bleeding, it is most effectual of all in the case of large vessels.

HERNIA.—This term is derived from the Greek word *hernos*, a branch or sprout, because the whole or part of an organ—generally a piece of bowel—*shoots out* of its natural position. Bowel hernias are commonly called *ruptures*. Hernia may be of a portion of the brain through a hole in the skull; the iris, through a hole in the cornea; the lung, through the chest wall, or the diaphragm; the stomach, through a rent in the diaphragm, may lodge in the chest cavity, and so forth. When the simple word hernia is used, we mean that a piece of bowel or omentum has come through the abdominal wall, and has been finally arrested only by the skin.

In practice, we meet hernia in three forms in the horse—namely, *umbilical*, *ventral*, and *scrotal*. Of course other forms occur, but they are both undiscoverable and out of the reach of treatment, except by the veterinarian.

Umbilical Hernia is common in foals, from the part of the abdominal wall at the umbilical (navel) opening being weaker, also from its being the lowest part of the floor of the abdomen when the animal is standing. It appears as a *soft-all-over*, compressible mass at the navel or umbilicus. Its cure is both highly desirable and practicable, especially in foals.

Treatment.—Get the best idea possible of the *size* of the opening in the abdomen, by very gently pushing the fingers into it, after, if possible, having pushed the bowel up into the abdomen. Take a piece of cork slightly less than the opening, and round off one end. Now take a large piece of amadou, with melted pitch upon it, and apply it tightly all over the hernia area, *after* the hernia has been replaced and the hole plugged by the rounded end of the cork. A surcingle is to be adjusted, and worn over the whole for two or three months or more.

Ventral Hernia is a rupture in any part of the floor or sides of the abdomen, usually caused by a pointed substance, often a cow's horn, being pushed against the abdomen,

when every part of the floor gets penetrated except the skin.

The symptoms and treatment are exactly the same as in umbilical hernia. It often happens that neither umbilical nor ventral hernia can be returned to its place and kept there; in which case the risk of it becoming much larger, also of being punctured, or becoming strangulated, is much greater.

Scrotal Hernia appears in entire horses, and in colts before castration, more frequently than in geldings, and is only to be dealt with by the veterinarian.

Note.—When a hernia protrudes through the skin, whilst assistance arrives the animal must be kept very quiet, and a large cloth well soaked in warm milk and water, half and half, held to the exposed bowel, taking care not to use too much pressure. The horse will require casting, deeply chloroforming, the bowel washing and returning, and the rent carefully stitching with silver sutures, etc., by the veterinarian.

HICCOUGH.—*See* SPASM OF THE DIAPHRAGM.

HIDE-BOUND.—This is one of the symptoms accompanying hard living, and exposure to cold and wet. Its treatment is obvious.

HIGH BLOWING.—*See* DEFECTS OF RESPIRATION.

HUMID TETTER.—This is one of the names given to ECZEMA, *which see.*

HYDROCELE.—Dropsy of the scrotum is called hydrocele, and is not very common among our horses. To distinguish hydrocele from scrotal hernia, we take a lighted candle and place it close to the scrotum, keeping the scrotum between our eyes and the light. The light faintly illuminates a hydrocele, but not a scrotal hernia. In scrotal hernia we

must lightly grasp the upper part of the scrotum, and then get some one to "cough" the horse, when the impulse of the bowel is felt. Hydrocele must not be meddled with by the amateur further than by the general treatment of DROPSY, *which see.*

IMPERFORATE ANUS AND RECTUM.—Very occasionally foals are born that have only a slight depression where the opening of the bowel (anus) should be. At other times the coats of the rectum (end gut) are adherent to each other. In either of these malformations careful (very careful) dissection is required with a sharpened piece of ivory or bone in the case of the rectum, and with a knife in the case of the anus, which the amateur will scarcely be equal to.

INCONTINENCE OF URINE.—When the urine is constantly dribbling away, instead of collecting in the bladder and being voided at proper intervals, the animal is said to have incontinence of urine. Of course this is only a symptom of a disorder, and the disorder or cause has to be looked for and removed to effect a cure. Irritation of the neck of the bladder from *cantharides*, either swallowed, or that have gained admittance through the skin, as in blistering with them; a *stone* in the bladder; certain *states of the urine* itself; *inflamed urethra*, as in balanitis, and various other disorders cause the incontinence.

INDIGESTION.—*See* DYSPEPSIA.

INFLAMMATION.—This, like fever, is so common an accompaniment of disease in its protean aspects that a separate treatment of the subject has been given in the *introduction*, and much of the utility of this volume to the amateur will depend on the mastery of what we have said under the two heads, FEVER and INFLAMMATION; therefore a knowledge of their

phenomena is the key to the successful treatment of nearly all diseases.

INFLUENZA.—This grave disorder occurs as an epizootic every few years, and is more severe in some outbreaks than in others. It also seems to be more severe in some districts than in others during the same visitation. Its most obvious characteristics are those of catarrh, so much so that one of its names is epidemic catarrh (when attacking man) and epizootic catarrh (when attacking animals). It was named influenza by the Italians, because they thought it was due to the influence of the stars.

Symptoms.—The symptoms are those of catarrh, with cough and sore throat; but the fever runs higher and is more prolonged, and the weakness far more marked. The mucous membrane lining the bronchial tubes is often much involved, and the bronchitis severe; the mucous membrane of the alimentary canal is also involved, the least thing giving rise to diarrhœa (true bowel catarrh in such a case).

Treatment.—Get professional aid if possible. If you are so unfortunate as to be unable to do so, then place in a large, well-ventilated loose box; clothe, and put on leg bandages; treat as in catarrh exactly, but if the weakness becomes very marked, wine or brandy must be given. In the case of valuable horses, a bottle of good old port must be consumed at thrice during every twelve hours the weakness lasts. In place of wine, four ounces of the best brandy are to be given every four hours. In the wine or brandy each time give twenty grains of quinine. The strongest beef-tea is to be freely given when the wine or brandy is requisite; also raw eggs, beaten up in good milk. In all cases whatever two drams of "Dover's Powder" must be given every night in a fluid menstruum—in whatever fluid may happen to be given at these times as a draught. Should inflammation or dropsy of any organ occur, the treatment in the

hands of the amateur may not be altered, though diarrhœa is not to be allowed, but the bowels controlled by two ounces of laudanum in a little warm water every six hours till the diarrhœa ceases or is more moderate. Costiveness must be meddled with charily, as aloes and castor oil are poison in influenza. Half-a-pint of raw linseed oil may be given, and the dose repeated in thirty-six hours if the bowels have not responded. The reader will gather future advice in the chapter on NURSING, as this affection is more controlled by skilful nursing than by anything else. Indeed, all the doctor's attentions go for little if the poor sufferer be not intelligently and tenderly nursed. Very frequent feeding with highly nourishing *liquid food* is the sheet-anchor of treatment.

INTUSSUSCEPTION.—When a length of bowel telescopes within another length of bowel, like the fingers of a glove in the act of drawing the fingers out, intussusception is said to take place. The piece of bowel which is drawn within is *grasped* by the piece of bowel which surrounds it; stoppage of the bowel occurs at the part, and inflammation sets in very rapidly, the case commencing and dying in a very few hours. This rapid fatality is due to the sequences following the first telescoping action—namely, strangulation, blood stasis, inflammation and gangrene. The pain is the most terrible pain a horse can suffer.

Symptoms.—They are those of spasm of the bowels, but with *incessant* pain of a most frantic kind. Some have asserted that there is a twisting of the body laterally, towards the side nearest the affection, marked by the nose and tail being directed or twisted to the part.

Treatment.—A chance of recovery lies in securing the horse and giving chloroform, to induce deep anæsthesia, and keeping up this action for some hours, having previously given F. xiii. If relief be not forthcoming in two hours, the inflammatory

swelling is almost sure to render the parts incapable of resuming their normal position. Bleeding to faintness, and giving two or even three ounces of laudanum immediately after, is excellent treatment, and repeating the opiate every half-hour till deep narcotism is induced. Morphia under the skin in large doses may be given, as well as laudanum by the mouth. The indications are to relieve pain at all risks, and to almost arrest bowel movement. The abdomen should be fomented as in enteritis, and the temperature watched for inflammation setting in. When once this occurs, the case is well-nigh hopeless. We fear the amateur will fail miserably in such a case; but he is to go on the lines indicated if he is so unfortunate as to have to rely on his own resources.

INVERTED UTERUS.—Sometimes the throes of labour or after labour are so strong that the womb itself, turned inside out and expelled from its position, hangs out of the vulva like a large, red, fleshy mass. In mares, cows, and sheep this is a common occurrence. The uterus or womb is literally turned inside out.

Treatment.—Tie the animal's head up in a narrow stall; get several wheelbarrow loads of solid manure and place it under the hind feet, so as to raise the hind quarters at least a foot; get a bed-sheet and a pail full of very warm milk and water, half and half, also a large clean sponge. Dip the bed-sheet in the fluid so as to soak it well, then get two men to place it under the enormous mass, so as to support it whilst you sponge lightly away any dirt that may be sticking to it. Having cleaned it, you are now to replace it by one of two methods: either by gently pushing the lowest part with your closed fist, in the same direction as if you meant to push it straight into the vulva—which, of course, you are trying to do—the whole mass being held well up by the two men with the sheet. The other way—quite as good, and much preferred by some—is to

lightly grasp the highest part, or that nearest the dock, with both hands, and then, first with one hand then the other, knead the parts inwards. If the quarters have been *well* raised, and the bed-sheet well applied during either manœuvre, the mass suddenly slips into the animal's interior with a run, as it were, much to everybody's relief.

It will greatly facilitate matters to give two or three ounces of laudanum before commencing to replace the uterus, so as to suppress straining or throes. After replacing, the interior of the uterus is to be dressed with an ounce of laudanum, carried into its interior by a small sponge. This takes away inducement to expel the uterus again by throes. Should this be feared, a kind of breech-strap, with a large pad upon it, must be devised, so as to exert pressure on the whole vulva. This is done by the aid of a surcingle and a little ingenuity.

ITCH.—*See* SCABIES.

JUGULAR VEIN LOST.—When inflammation in the jugular vein has taken place after bleeding from it, it sometimes happens that the vein becomes obliterated, when the horse is said to have a lost jugular. As the two jugulars form the highway by which blood driven to the head gets back again to the heart, it is a serious thing for one to be lost. Whilst the animal is at rest, the circulation quiet, and the head held on a higher level than the body, the one vein left may be equal to the occasion; but when the horse holds his head down, as in grazing, passive congestion of the head and some dropsy occurs, enlarging the head, and inducing, it may be, very serious symptoms. The same phenomena are seen during active exertion, so that a horse with only one good jugular vein is seriously impaired.

Symptoms.—The above symptoms are induced by grazing and active exercise. The bleeding marks are left much scarred

by the inflammation which has destroyed the vein. Pressure on the vein fails to fill it, and so raise it.

JUGULAR, INFLAMMATION OF.—*See* PHLEBITIS.

KNUCKLING OVER.—*See* FETLOCK JOINT DISLOCATED.

LACERATED EYELID.—This is rather a common accident, from projecting nails. It should be sewn up at once, if possible. After putting on a twitch, take an ordinary sewing needle armed with white cotton, or with thread. Next bring the torn edges lightly but firmly together with this, by five or six separate and completed stitches, taking care that the parts correspond in position as in health. Nothing more is needed. Keep away all wet, also lotions, ointments, and so forth—everything, in fact, unless it be a little styptic colloid—and at the end of a week cut each stitch in one place, and withdraw it.

LAMINITIS.—The internal surface of the wall of the hoof all round is covered by 500 or 600 parallel, perpendicular, horny processes, every one of which reaches almost from top to bottom. They are continued on the inner surface of the bars also, and are called the *insensible* laminæ. Dove-tailing into these are a corresponding number of processes on the corresponding surface of the sensitive foot, which get the name of the sensitive laminæ. The latter are continuations of the true skin, whilst the horny hoof and its horny laminæ are continuations of the outer or scarf skin. Inflammation of the sensitive laminæ is called laminitis.

Causes.—Inflammations of the lungs, bowels, etc., are apt to drop into the feet, and appear as laminitis. Indeed, if a horse break loose and gorges himself at the corn-bin, or with wheat, especially soft wheat, he is pretty certain to be discovered a few hours after with laminitis. Inordinate feeding,

and drinking large quantities of cold water when heated, are the commonest causes.

Symptoms.—The attitude assumed is so characteristic that a horse thus suffering can be distinguished as a subject of laminitis a hundred yards off. The fore feet are advanced, and he attempts to rest upon the heels; the hind feet also are advanced far under the body, whilst the horse attempts to make them bear the weight of the body; the feet are very hot, and the pastern arteries throb. The flanks heave, the pulse is frequent, and the temperature high; whilst agony is depicted on the countenance.

Treatment.—After giving a brisk cathartic, a good bed of straw is to be formed at once, and the horse thrown upon it, and the legs tied with ropes, so that he cannot rise. Next elevate the four feet above the level of the body, by using packings of straw. Relays of men are to make pressure on the throbbing arteries, as they pass over the sides of the fetlock joint, for some hours, strangling the arteries a quarter-of-an-hour at a time, and allowing them to act five minutes—fifteen minutes' pressure, five minutes' relief. This is very fatiguing work, and requires strong men to perform it. After getting the horse down, ten minims of "Fleming's Tincture of Aconite" is to be given; afterwards give two drops every hour, for twelve hours, or until the symptoms yield. The cathartic, the elevation of the feet, the strangulation of the arteries, and the aconite combined, will break the force of the severest case in twelve hours. The horse should be kept on the bed of straw at least seventy or eighty hours, and fed on gruel and lowered diet. Avoid poultices.

At the end of forty-eight hours the pasterns are to be severely blistered, and the blistering repeated in ten days or so.

LAMPAS.—A congested condition of the gums and hard palate attending DENTITION, *which see.*

LARYNGITIS.—Inflammation of the larynx, or voice-box, attending catarrh, etc. (*See* CATARRH.)

LICE.—*See* PARASITES.

LIPS, PARALYSIS OF (also called Palsy of the Face).—When the nerve, whose branches can be seen coursing over the cheek from the root of the ear forwards over the side of the face, becomes interfered with, from a cold draught blowing against the side of the head, the lips hang pendulous, the eye of that side is partly closed, and the whole side of the face is let down, so to speak, and the cheek of the affected side bags, and allows food and saliva to dribble out of the corner of the mouth. The horse is said to have facial palsy.

From sheer debility, old horses are often afflicted with pendulous lips, which is quite another thing. The horse in either case has to dip his mouth and nose below the surface of any water he may drink, and in facial palsy the food is badly retained in the mouth, as we have described.

Treatment.—There is no cure for pendulous lips from debility, unless we can overcome the debility. In facial palsy, the side of the head, and especially the root of the ear, is to be well rubbed with warm stimulating embrocation (F. xlviii.) twice a day, and a woollen hood worn; the horse being otherwise treated as for catarrh, if there be evidence of its presence; if not, perseverence with the liniment will mostly effect a complete cure in ten days or so. The liniment may be further diluted with oil if it causes soreness.

Note.—Should facial palsy arise from brain disease, or disease of the bones about the ear through which the nerve passes, a cure is not to be expected.

LUXATION OF THE PATELLA.—The patella, or stifle-bone, corresponding exactly with our knee-cap, sometimes acquires a habit of slipping off in an outward direction,

especially in the case of young, weakly foals running on hilly pasture.

Symptoms.—Long, as a rule, before it actually slips off, it has a habit of slipping sideways, and making a noise as it does so. When it slips off completely, the leg is *straightened*, and held back in this unnatural predicament.

Treatment.—Place a piece of carpet around the pastern, and tie the end of a long, stout rope also around it, then carry the other part of this rope over a beam. Make the animal stand with his head to the rope as it goes over the beam, and whilst men pull the rope, and therefore the leg, forcibly forward, the palm of our hand is to grasp the patella, and push it forwards on to its former site.

If the rope arrangement can be made permanent, do so; if not, a rope is to be tied loosely round the neck, as the collar sits, and one end of it carried back and tied round the pastern, the object being to keep the foot dragged forward. The stifle joint is now to be twice blistered, and kept in this constrained position at least three weeks. A cure may thus in most cases be looked for.

LYMPHANGITIS—WEED—SHOT OF GREASE—MONDAY MORNING DISEASE.—All these names are given to an acute inflammation of the lymphatics of one of the legs, usually the right hind leg, usually found on first entering the stable on Monday morning.

Symptoms.—The limb is found thick from top to bottom, like a mill-post; the animal breathing quickly; has a high temperature; accelerated pulse—in short, he is in a high fever from the inflammation in his leg. It usually occurs to coarse-bred horses, and results from the Sunday rest throwing more work on the lymphatic system.

Treatment.—Abstract blood from the toe of the limb freely; take away all corn, hay, &c., and place on low diet·

give a full dose of aloes (F. xii.); twist a hay-band several yards long, and begin at the hoof and wrap it, not tightly but yet firmly, and as closely as possible, from the hoof to the very top of the limb. Take care to add more afterwards if it slips down. A pailful of very hot water is to be poured, in small quantities, all over this bandage repeatedly, for twenty-four hours or more. In three days the limb begins to settle, if the aloes have done their work, the bleeding has been free enough, and the fomentations diligently applied. When the thermometer tells us the fever has abated, give at once hand-lead exercise for half-an-hour four times. a day at equal intervals, and give a little hay as well as mashes, getting to corn in a fortnight or so.

Note.—When treatment has been badly carried out, and the limb remains thickened, most likely it will be permanent in spite of all we can do. However, an embrocation (F. li.), rubbed on the inner part of the thigh at the top night and morning for a few weeks, is useful, and may reduce the limb somewhat.

MAD STAGGERS.—Active, but more frequently passive, congestion of the membranes of the brain, from feeding with the head down, engorgement of the stomach, eating certain foods, such as ripe or fast ripening rye-grass, &c., brings about a set of brain symptoms known as "Mad" or "Stomach Staggers."

Symptoms.—First there is *drowsiness* and a laziness about whatever the horse may be doing at the time, and the pulse is slower than natural. Active frenzy succeeds, sometimes with much rapidity, the movements becoming ungovernable, not only by attendants but by the horse himself; the senses departing—even the sight abdicating its functions—so that the violence is dangerous to the horse himself and every one around. The regulation of movement is held in abeyance, the poor sufferer being by turns convulsed, paralysed, active, and

frenzied; in short, the symptoms are very like those produced in man by an over-dose of Indian hemp, should the reader be acquainted with this now familiar medicine.

Treatment.—First remove to a well-padded box; at once give a dissolved aloetic bolus (F. xii.), or, if the frenzy thwarts us, we must squirt twenty-five drops of croton oil, mixed in a little olive oil (F. xx.), into the mouth by stealth. Next apply ice-bladders to the head, and ice-bags along the spine. We can do little more, unless an attempt can be made to wash out the stomach, as directed in CHOKING. The principle of treatment consists in clearing out the stomach and bowels, and calming the central nervous system, and preventing the horse injuring himself or others during the time this is being done. Bleeding does harm during the drowsy stage, whilst during the frenzied stage it is luckily impossible, for then it would kill.

MALLANDERS.—When a dry scurf upon a red ground appears at the back of the knees, where flexion takes place, the disorder is called Mallanders. (*See* ECZEMA.)

MAMMITIS—INFLAMMATION OF THE UDDER.—When the udder is in its highest state of activity, just after parturition, also when it is the subject of reflex irritability, as it often is during œstrum, the active congestion of the so-called physiological state is so near that of the pathological that the least extra *irritation* will tilt over the physiological or healthy, into the pathological or morbid. The most common irritant is the stagnant milk in the ducts leading to the teats, where it gets hardened. Hand-rubbing, or the rubbing of the nose of the foal, are common and efficient irritants. The reflex irritation during œstrum we cannot avoid. Apart from this, of course the udder, either during action or rest, is liable, like any other part, to inflammations and "gatherings."

Treatment.—Endeavour to disperse the swelling that is

threatening to end in an abscess, by painting over it, and for a good distance all round it, belladonna (F. xlix.) This effectually checks the gland from secreting, and by so much lessens the risk, on the principle of resting an inflamed part. Should it go on to an abscess we must evacuate the abscess when ripe, and treat it exactly as we should any abscess elsewhere. (*See* ABSCESS).

MANGE.—*See* SCABIES.

MOLTEN GREASE.—This term is an old-fashioned spelling for what we should now term melted fat or grease. The farriers in days gone by gave it this name because they thought that it was the fats of the inside which melted and came away with the dung, either coating it over or appearing mixed with it in some form. As a fact, the *mucus* of the large bowels, the colon most of all, is secreted in greater abundance during certain times—such as during diarrhœa, dysentery, bronchitis, bronchitis with pneumonia, etc.—and is shed more abundantly, either sticking to and around the dung-balls, or loose and unattached.

The treatment forms a part of whatever disorder this phenomenon may accompany, but the symptom is a beacon warning us to be cautious with cathartics.

MOLARS, DEFECTS OF THE.—The molar teeth or grinders are very apt to go wrong in several ways :—1. Their edges may become sharp and cut the lips or the tongue. 2. One or other of them may stand up high and dry above its fellows, thrusting the tooth it falls upon in the opposite jaw just as much below the grinding level of its fellows, as it—the up-standing one—is above its fellows. 3. The fangs are apt to inflame, and toothache and gum-boil result; for which *see* TOOTHACHE.

Symptoms.—When anything of moment occurs to the

molars the horse loses condition, and any whole corn given is apt to pass through the alimentary canal and appear in the dung just as it was before being swallowed. Saliva in some bad cases trickles out of the mouth corners, and in the worst cases of all the food also.

Treatment.—The inner edges of the lower molars cutting the tongue, and the outer edges of the upper molars cutting the cheek, must be rasped smooth, after gagging the mouth, and if necessary, putting on the twitch. Any tooth standing up very high, and dove-tailing into the upper molars, most seriously interferes with mastication, and must receive a smart blow with a chisel and be thus removed. (*See* OPERATIONS.)

MUD-FEVER. During a long spell of wet weather and muddy roads, the skin of horses' legs gets so congested and irritable that a smart fever for a few days results, and the hair comes off in little patches called "mud-scalds," giving the animal's legs the appearance of being peppered with shot-corns.

Treatment.—Stop all work, give a cathartic (F. xii.) and low diet, and apply lead lotions (F. lvi.) to the legs.

Note.—The best precaution against mud-fever is to refrain from washing the legs when mud-splashed, but rather to let it dry; then brush it off with not too hard a brush. When fever is not present, and throwing off work impossible, give an alterative bolus (F. xviii.) twice a week, and refrain from washing the legs. The lotion may be applied, and if there be much heat and itching, apply F. lviii. Should the temperature rise, or the irritation get so severe that the animal can neither rest nor feed, the more active treatment has to be resorted to.

NASAL GLEET.—Prolonged discharge of mucus or pus from one or both nostrils is called nasal gleet, and is a symptom of some disorder, usually either of a grave nature or at least one not easily cured.

Causes.—These are numerous:—1, glanders; 2, carious molar fangs; 3, diseased bone in the nose, or the chambers of the head; 4, pharyngitis or laryngitis; 5, congestion or relaxation of the lining membrane of the nose left by a catarrh, and many other causes.

NASAL POLYPUS.—Any of three kinds of tumours are apt to grow upon the lining membrane of the nose, and receive the name of polypus. They are sometimes very troublesome, and block up the nostril in which they grow.

Symptoms.—Occasional bleeding, very slight in amount, and confined to the side affected; snoring and distress during active exercise; and, in some cases, slight swelling on that side of the face.

Treatment.—They have to be twisted or cut out. There is no danger attending this operation, but it taxes our ingenuity to find them when situated high up, to grasp them, and cut or screw them out.

NAVICULAR DISEASE.—This is an incurable ulceration of the surface of the perforating tendon of the foot, and very often the face of the navicular bone, over which it plays like a pulley, situated at the hollow of the heel. Volumes have been written upon the affection, as on Spavin, but in both cases the tales are simple and soon told, if the endless theories regarding their nature be avoided. When once inflammation of either of the surfaces has gone on to ulceration a cure is seldom obtained, for the simple reason that the surfaces, whether inflamed or not, are bound to press upon and chafe each other whenever the foot is put down. The pain at the back of the affected foot causes the animal to favour and rest the foot on every convenient occasion, and this brings on narrowing at the heel or contraction, which by degrees spreads the whole length of the foot, and then we have contracted foot.

Fine, wide, open feet are just as subject to the affection as other feet. Nature's cure consists in forming a clumsy kind of union between the tendon and bone, by which friction of the opposed surfaces is avoided.

Symptoms.—In standing, the horse "points;" that is, he throws his foot forward with the toe resting on the ground, or the whole ground surface of the foot just touches the ground. In the walk and trot he goes with a shambling gait; hence the term "groggy" lameness. The term groggy may be explained to be a careful, wincing, shuffling along, not easily described but easily recognised when seen, and not easily mistaken.

Treatment.—In those rare instances where the disease can be detected at its commencement a cure may be looked for. Remove to a loose-box, give a cathartic (F. xii.) and low diet; remove the shoe and bleed freely at the toe, then poultice the entire foot diligently for a week or so. At the end of this time, after putting on a patten shoe, blister all round the coronet and pastern very smartly twice. Another good plan is to put in a frog-seton, as well as, or instead of, blistering. Any way, the horse must rest at least two months, on account of the very slow reparative processes in bone, tendon, and cartilage. Rest alone is highly beneficial in this disease: in no disease is it more so. In the more chronic form—that is, after ulceration has once fairly begun—palliation alone is to be looked for. A long rest, blisters to the coronets, and wearing a frog-seton all the time, is about the most we can do. If a horse be utterly worthless through navicular disease, or any foot lameness, "unnerving" may be performed; but this is such an unfavourable operation, if effectually done—and it is worthless if not effectually performed—and renders the foot so liable to degenerative change, to be pricked without our knowing it (until quittor appears) in shoeing, and gives rise to such numb peg-legginess of the nerveless member, that in the author's opinion the question

of "unnerving" ought never to be considered apart from shooting as an alternative.

NETTLE RASH.—*See* URTICARIA.

OPHTHALMIA.—Inflammation of the eye, or rather of the conjunctival membrane, is called *simple* ophthalmia; inflammation of the deep structures forming the ball of the eye is called *specific* ophthalmia; therefore, the term ophthalmia has two meanings, and without an adjective is worthless.

Simple Ophthalmia, sometimes called traumatic, is caused by any efficient irritant applied to the conjunctiva, such as a hay-seed getting under the lids, the blow of a whip-lash, a long-continued draught of cold air, and so forth.

Symptoms.—The eyelids are closed, swollen, and suffused with tears, and any attempt to open them makes the horse shrink.

Treatment.—This may be a simple ailment, but if the blow or other irritant which has caused it has injured the cornea, a speck may remain permanently. Remove the irritant by means of twitching, and any further necessary manœuvre: place in a darkened, cool, loose box, and keep a rag constantly wet with lotion F. lvi. tied, and hanging like a housewife's apron over the affected eye. This simple treatment is all that is required, and will only take a few days to effect a cure.

Specific Ophthalmia is a grave constitutional affection which recurs again and again until it leaves the eye smaller than its fellow, or cataractous, or entirely blind. Worse still, the affection is very apt to shift its quarters and to appear elsewhere, more especially to appear in the sound eye, until both eyes are affected (damaged, or blinded). Through this latter tendency, and its uniform and rapid amelioration under the influence of colchicum, also its undoubted constitutional

character, the author is of opinion that it is of rheumatic character, or perhaps a gouty rheumatism.

Causes.—These are quite unknown, but from the fact that it is far less frequent now than when stables were badly drained and worse ventilated, bad sanitary arrangements may cause it. One attack is so sure to be followed by another, that it is also called recurrent or periodic ophthalmia.

Treatment.—Any single attack is soon dispersed by bleeding, physicking, and colchicum, but not before it has weakened the structures of the eye, and left them far worse than it found them. The treatment is to be prompt. At once remove to a large well-ventilated box, and give F. xxxiii. and low diet. Take blood from the jugular. When a throat seton can be inserted it should be, and as soon as possible, and diligently dressed with a brisk digestive, such as common fly blister. If a seton cannot be managed, the whole space between the branches of the lower jaw should be blistered with liquid blister. A few days of low diet, colchicum, and counter-irritation, with an occasional alterative (F. xviii.) for the next two or three weeks, will usually cure any single attack.

OVER-REACH.—Sometimes the inner front edge of the hind shoe catches the upper and back part of the corresponding fore foot, and either cuts a piece out, or makes at least an ugly cut, from the hind foot over-reaching during the trot. The open cut thus formed has to be treated like an ordinary open wound, by being kept clean and dry, and covered over from time to time, by means of a feather, with either Friar's-balsam or styptic colloid. Of course the hind shoes must be well rounded at the toes in shoeing, which all farriers know how to do.

OZŒNA.—From the Greek, *oze*, a stench. When the nasal discharge has a disgusting odour the affection is known by the name of ozœna.

Causes.—Chronic inflammation of the lining of the nostrils; chronic ulceration (simple, or glanderous); abscess of septum; abscess of antrum; polypi; necrosed or dead bone; decayed fangs of molars opening into antrum, etc.

In most cases the amateur can scarcely hope to find the cause; neither will he always be able to remove it. Mitigation of the stench may be effected by the free injection of Condy's Fluid up the offending nostril; but the disease should be sought for, and treated, if possible, by the expert.

PARALYSIS.—Loss of movement of a part, or parts, may be due to several causes, thus: the back may be injured, though short of being broken, in casting, and the animal ever after have less use of his hind legs, and go with an uncertain, rolling gait. The most common form of paralysis, that of one side of the face, is quite curable usually, and has been treated of. (*See* LIPS, PARALYSIS OF.)

PARAPHYMOSIS.—From the Greek, *para*, about, and *phimo*, to bridle. Any affection of the sheath which causes it to strangle the penis when that organ is protruded and prevents its return within the sheath is called paraphymosis. Its causes must be looked for, and such treatment applied as may be found requisite.

PARASITES.—From the Greek, *parasiteo*, to flatter another and live at his expense. Animals living *upon* another animal are called epizoa; those living *within* are called entozoa. Plants living upon an animal are called epiphytes.

In practice, the following classification is useful:—

ENTOZOA . . { Bots. / Round Worms. / Thread or Whip Worms.

EPIZOA . . .	Mange insects (*See* SCABIES.) Lice. Fleas. Ticks. Larvæ of Gadfly. (*See* BOTS.)
EPIPHYTES . .	Favus (Honeycomb Ringworm). Tinea Tonsurans (Common Ringworm.)

Bots, round worms, and thread worms have been already treated of under the head of ENTOZOA. Mange will be found under its proper term, SCABIES.

Lice, fleas, and ticks may all be got rid of quite easily by the following treatment, taking care to either destroy all clothing worn during the affection, or to wash it and then bake it in an oven heated to at least 150° Fah. Harness, brushes, and everything that has come in contact with the skin must be washed over with a vermicide. The vicinity of hen roosts, pigeon houses, and all other sources of epioza must be avoided, or new arrangements made, according to obvious indications.

Treatment of Lousiness.—This consists in destroying the insects and soothing the irritation. Any of the following medicaments are excellent: Calvert's or Macdougal's *Carbolic Soap*. *Carbolic acid* may be used as a lotion (one of the acid to twenty of water), and the animal sponged over with it night and morning. *Sulphur*, in the form of ointment (F. lxii.) is also good, rubbed over the animal every night. *Mercury*, as in F. liv., is capital, the animal being sponged all over with it a few times.

Staves acre (*staphisagria*), employed as an ointment, has a great reputation (F. lxi.) The author prefers either carbolic acid, or mercury lotion or wash, for two reasons:—1. These are more powerful parasiticides; and, 2. As lotions and washes they find every nook and cranny, and are also more cleanly than ointments.

The following elementary facts may prove of use to the stock owner. According to Kuchenmeister and Von Siebold:—

1. Every parasite has an independent life of its own.

2. Most animals, even parasites themselves, have each their own peculiar parasites.

3. Some parasites pass or migrate from the body of one animal into that of another, including man, or from one part of the same animal to another part (cavity or viscus) in it. Such migrations are required for the introduction of the entozoa, or their ova, into the animals they inhabit, where they undergo a series of changes in their progress to maturity.

4. Through animal and vegetable food and drink, and in various ways, entozoa pass into the body and find their way into the most delicate tissues, as minute ova, or as embryos, or as fecundated females.

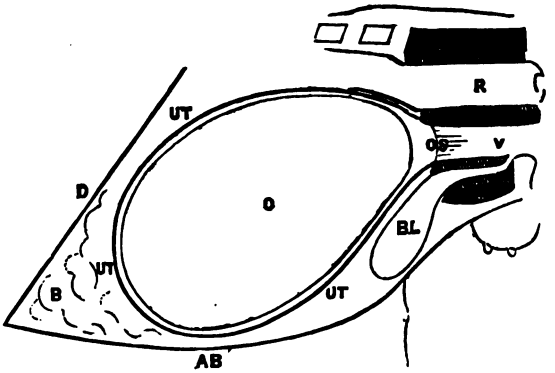
5. That they undergo progressive changes of development towards maturity in *each* of the new localities where they find subsistence and protection.

PARROT MOUTH.—When the upper incisor teeth overlap the lower ones, the deformity is called parrot mouth, for obvious reasons. Of course this deformity is incurable, and gets more pronounced as age advances.

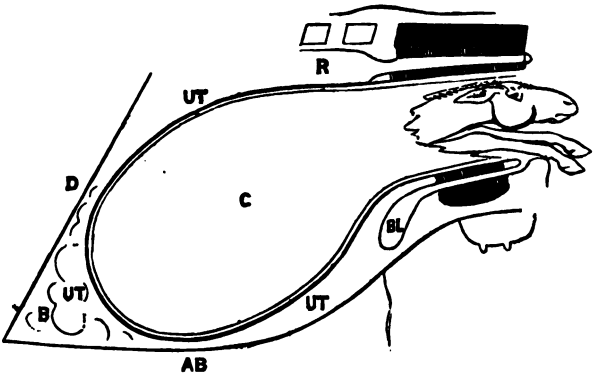
PARTURITION, AND ITS DIFFICULTIES.—At the expiration of eleven or twelve months from the time of *conception* (counting from the time of *insemination*—the two processes not necessarily being synchronous), the offspring of the mare is, or ought to be, able to maintain an independent existence. When this time arrives the dam expels the fœtus by a very complex series of processes known as the *act of parturition*. In order to give real assistance when any of the numerous movements of this act go wrong, it is absolutely essential to master the leading principles of the act; and for this purpose a short review of the whole of the positions and movements will now be placed before the reader; and if he be a stock owner he will do well to think out and make his own the following explanations.

The foundation of our knowledge of the *act of parturition* is a thorough comprehension of:—

1. The composition and form of the *ovum*.
2. The anatomy of the parts through which it must pass.
3. The forces which expel it.



SHOWING POSITION OF PARTS BEFORE FIRST STAGE OF LABOUR.



SHOWING THE PARTS OPENED OUT.

1. **The ovum.**—On referring to the diagram, it is there found depicted as an egg even in form. It is really made up

of a surrounding capsule (called the *bag of membranes*): and this bag of membranes again encloses, and is distended by, what goes by the name of "the waters" (a straw-coloured liquid); then floating in the waters we find the fœtus itself. Fœtus enveloped in waters, and the whole enclosed by a delicate membrane or bag, is the *ovum*, which adheres by the placenta to the wall of the uterus.

O, is the ovum (as described above). UT, is the uterus. OS, is the os, or mouth of the uterus. V, is the vagina. Above and below the os and vagina we see the rectum, R, and the bladder, BL. Surrounding the os, vagina, rectum, and bladder in part, we have the dense bony canal through which the fœtus and its membranes have to pass, and denoted in the diagram by being shaded. D, is the diaphragm; B, the bowels; AB, the floor of the abdomen or belly.

2. **The anatomy of the parts through which the ovum must pass.**—A side view in section is given, showing a shaded part representing a section of the bony tube or pelvis. This is lined by soft parts (rectum, bladder, &c.), which are emptied and compressed, as seen in the second figure, when the fœtus is passing.

3. **The forces which expel the ovum.**—These are the large contractible uterus, itself surrounded by the inflated bowels, and the whole compressed during a throe or pain by the diaphragm pressed backwards, and the abdominal wall compressing and shrinking.

The Act of Parturition.

This wonderful and very complex act is made up of three *movements*, and is the source of most captivating problems in dynamics. These are:—

1. The opening up of the uterus.
2. The passage of the fœtus.
3. The expulsion of the after-birth.

1. **The opening up of the uterus.**—If the reader compare the two figures, directing, for the present, his attention to the black line indicating the uterine wall in each diagram, he will be struck with the change of form which has taken place; the constrictions formed at the os and vagina of the figure showing the unruptured ovum, have been quite obliterated, and are nowhere to be found in the other figure. The vast expansion which has taken place has stretched the wall into a straight line almost. Then, again, the bag of membranes having burst, has let out the "waters," leaving the ruptured bag itself and the fœtus protruding.

How has this great change been brought about? This great movement (forming the first act of parturition) has been accomplished by the forces we have referred to acting every few minutes, for half-a-minute at a time, and called "pains," squeezing the large, soft ovum so powerfully as to protrude it, little by little, into the os. The os being thus filled and expanded, the water-bag gains the interior of the vagina, which is dilated in its turn also till the wall of the uterus, the wall of the os, and the wall of the vagina is *one straight line*, having its distinguishing parts obliterated. This expansion may be seen to have occurred at the expense of the rectum and bladder. After this is accomplished, the bag of membranes, or water-bag, bursts, and its soft, straw-coloured fluid performs its last office by lubricating the passage, in order that the fœtus may glide the more easily through. The waters, then, are of the greatest use, from first to last: during pregnancy the fœtus floats in them, sports about, and takes daily exercise in them without fatigue; they protect it from all pressure and blows, and, as we have seen, when it is ready to come into the world, these waters and their membrane, or "bag of waters," as the whole is called, play the most important part of all in the *first act* of parturition, by opening up the passages by soft, even pressure, and finally lubricate the passage.

2. **The passage of the fœtus.**—The fœtus has had the soft parts dilated for it to pass through; it has now to pass through the rigid, bony, short tube. Here we are met again by beautiful dynamic problems. We have a rigid, short tube, lined with *soft* parts, to be passed through, and, as we have seen, well lubricated, and a long, narrow, supple body to pass through it, three times *longer* than the widest diameter of the tube, whilst its *width* quite fits the tube, with no room to spare. *Therefore, it must go one end first, or not at all.* The long, narrow, supple body (fœtus) we must here regard as a long, narrow trunk, having five extremities—namely, the *four legs* (counted as four extremities), and the *head and neck* (regarded as the remaining extremity). Such a body must pass one end first, and all the extremities, being long and narrow, must be in a line with the tube itself; or, in other words, the whole fœtus must range itself in a line with the tube it has to pass through. In a natural way, this is accomplished by the head and neck lying flat upon the two fore legs (three *extremities* in a line), then the trunk comes, and, lastly, the two hind legs are stretched backwards their full length, thus forming a continued line.

3. **The expulsion of the after-birth.**—The after-birth, as has been already explained, is the flaccid, collapsed ovum, which has lost its bulk by the escape of the waters, and by the expulsion of its fœtus. The placenta now forms the greater part of what remains of the ovum, the after-birth, the ruptured membranes being mere appendages to this. So loosely is the placenta attached to the mare's uterus, that the same "pain" which expels the fœtus often expels the after-birth as well.

Note.—The feebleness of the adhesion of the placenta to the uterus, together with the great power of the "pains" in the mare, not unfrequently causes the ovum to be expelled entire. Again, the membrane of the ovum often remains unruptured

in the domestic animals, and the bag of waters appears protruding at the vulva as a large water-bag. In the cow, etc., the placenta is split up into numerous parts, and its connections with the uterus are so scattered that it is sometimes days, or even weeks, before the after-birth is shed.

Difficulties and Accidents in the Act of Parturition.

A. Difficulties and Accidents in the Opening up of the Uterus.—We have already seen how the uterus is opened up in the natural way. The following conditions may arise to prevent or retard this process.

1. *Rigidity of the Os.*—When the pains or throes are squeezing the water-bag, the external opening or mouth of the uterus (os) is pressed upon, but may not yield so as to admit "the thin end of the wedge." In such a case labour lingers in its first stage for hours, or even a day or two.

To ascertain what is hindering labour, introduce the hand into the vagina,* and examine the os (its walls, their thickness, the opening, and how it admits of being dilated with the fingers).

Treatment.—Should the os be rigid, and refuse to admit the fingers, carry a knife to it, well guarded by the hand, and, having introduced the blade, make a dozen incisions about half an inch in depth, and evenly distributed all round the inner margin.

2. *Premature Rupture of the Water-bag.*—We have seen that this bag is insinuated first into the os, then the vagina, and lastly the vulva, all of which it ought to open up before it bursts. This is not always so: the membrane may fracture

* In obstetric operations on the lower animals, at least the coat must be taken off, and the sleeves rolled up to the elbows, or further. Then the whole arm and hand, with the exception of its palmar aspect, must be coated over with lard.

with the very first "pain." In this case the water escapes through the narrow os, and the uterus contracts upon and moulds itself around the fœtus, which is pushed against the os as a most inefficient substitute for the soft, expanded bag of waters. This retards labour, from the os being badly dilated, the remainder of the passage becomes dry and hot, and the friction much increased.

Symptoms.—The waters have burst and come away, the parts—if hours have elapsed—are dry and hot, and the presenting part of the fœtus can be felt uncovered by the bag of waters.

Treatment.—Inject quantities of well-boiled gruel, then seize the presenting part of the fœtus and deliver by traction.

3. *Dropsy of the Water-bag.*—Sometimes the waters are so abundant, and the membrane so distended, that the uterus is quite incapable of properly contracting upon it.

Symptoms.—These are, lingering labour, the os soft and dilatable, and the water-bag (unruptured) to be felt beyond the undilated *os*. The examination should extend throughout a "pain," and the tightness of the membrane be compared before and during the pain.

Treatment.—Give a brisk stimulant, such as half a bottle of brandy in warm water. Time should be allowed, as there is not much danger to either mother or offspring. If the pains get perceptibly weaker, the membranes must be ruptured by pushing a finger through them. After this, deliver by traction, if the pains are too weak to enable the fœtus to open up the uterus.

4. *Twisted Uterus.*—Occasionally the uterus is so twisted upon itself that, instead of the *os*, the water-bag is pushed against the hinder portion of the uterus in its twisted condition. Much skill is required in ascertaining the direction of the twist, and in untwisting it. The indications are obvious, and the accident too rare to be dwelt upon in this place.

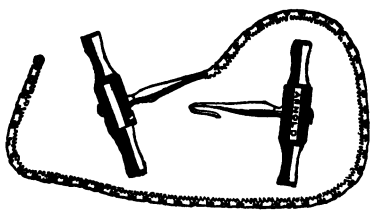
B. The Passage of the Fœtus.—As we have seen, the

fœtus, *in its most favourable position*, exactly fits the tube through which it has to pass; therefore any defect in the tube which alters and makes less its inner measurements, or any unfavourable direction assumed by the fœtus, or unnatural size or shape, will hinder or altogether prevent the fœtus passing in its entirety. The power of expulsion may also be inefficient. We have, then, the following to consider:—

(*a*) Altered natural measurements of the tube.

(*b*) Abnormal direction, size, and shape of the fœtus.

1. The tube (pelvis) is made up of a rigid, bony framework, lined by soft parts, as previously explained. *Rickets* may have so altered its diameters as to render it incapable of transmitting the fœtus. *Exostoses* sometimes spring up as large masses on these bones, and grow in the pelvic cavity. *Soft tumours* likewise appear in the pelvis, and attain a very considerable size. *The bladder*, if full, is often a great hindrance to parturition, until emptied by the catheter. A *loaded rectum* is not a great obstacle, but it sometimes has to be emptied by an enema. The *vagina* is sometimes very unyielding, and is especially bad to dilate when this has to be accomplished by the fœtus, and not by the powerful water-bag; especially is this the case when it is strictured organically from any cause. The *vulvar opening* may be rigid, or very narrow, and cause much delay in delivery.



CHAIN SAW, FOR REDUCING THE SIZE OF THE FŒTUS.

Some of the above obstructions necessitate the reduction of the size of the fœtus before delivery can be effected—such as rickety narrowing, exostoses, and some soft tumours. Time, and the application of simple remedies, will overcome the majority of the others.

2. The fœtus itself is the most common cause of difficult labour, either by lying wrong, or being too large, etc. The position of the fœtus is called its *lie*, and will be spoken of as such.

The proper *lie* of the fœtus we have already described to be nose and two fore feet presenting, the extended neck and head lying along the extended fore legs. These three extremities passing, the body follows, and the brim of the pelvis catching the two hind extremities, stretches them out their full length backwards.

The proper lie may be modified by :—

(*a*) *One fore leg dropping—the other fore leg with neck and head keeping the proper lie.*

Symptoms.—One fore foot and nose presents.

Treatment.—Tie a piece of line *firmly* to the pastern of the fore foot which presents, and another cord *tightly* around the lower jaw. Now steadily put back the presenting foot and leg, so as to allow room for fetching up the missing fore leg. A little patience and tact will fish up the missing limb, which must be secured, like its fellow, by a *separate* cord. Now gently bring back the first leg, and deliver by traction on the two leg-cords.

Note.—Never put a presenting part back without first so cording or hooking it that you may get it forward again at pleasure.

(*b*) *Both fore legs dropping—nose only presenting.*

Treatment.—Thoroughly secure the lower jaw by a tight cord. Then, having given the cord to an assistant to keep tight—he must not pull more than sufficient to keep the head in its place—fish up either leg, secure it as before, and put it back till the second is secured, and proceed as before.

(*c*) *Both fore legs presenting, neck and head absent.*

This is a more difficult lie to rectify for several reasons. The head and neck may drop down between the fore legs, or on

one side of either leg, or, worst of all, it may be bent sideways, with the nose lying on either shoulder.

Treatment.—Secure both pasterns thoroughly, then put one leg back, and make out the lie of the head and neck. First, if the head and neck have dropped *between* the fore legs, and the operator uses his right hand best, let him push back the *left* fore leg, having the right fore leg kept well out. Next, let him carry his right hand down to the mouth of the fœtus and seize it around the lower jaw, when he will be able to pull it to the right and screw it up to the inlet, in a direction for coming. Second, if the head drops on the outside of either leg, the fore leg it falls over may be put back and the jaw seized as before, or *both fore legs* may be pushed slightly back, and *any part* of the head seized. Should the operator have a difficulty in seizing the head, he may be obliged to have recourse to a running noose, carried on the end of a stiff rod, though with patience and tact he will rarely fail to get up the head with his hand, especially if he can grasp an ear, or hook his finger up either nostril, or angle of the mouth. When the head and neck lie back away over the shoulder the fore legs past the elbows are often fast driven into the passage (engaged in the passage, as it is called); in this case, after securing both fore pasterns as before, the leg on the side the head is resting must be put *thoroughly well back.* If now an ear can be grasped, all is well, for then the head can be pulled a little way, to admit of a nostril, or, what is better, the angle of the mouth, being reached, when the rest is easy. It often happens that the longest arm can only just reach and touch, without being able to grasp, the ear. In such a case it is quite necessary to draw forcibly forward the leg outside the vulva, until the ear can be grasped, and then the corner of the mouth or nostrils may be hooked with the fingers. After this, if the head refuses to move, the fore leg pulled forward must be pushed back a little, to relieve the wedging, which prevents the head moving.

Note.—The sharp brim of the pelvis (lowest inner border of the tube) is often a source of great perplexity, from its long, sharp edge protruding, and catching parts of the fœtus. Thus, at four o'clock one Sunday morning the author arrived at a nobleman's stables and found quite a dozen grooms and labourers fatigued by their pulling efforts on a foal's two fore legs. The mare was lying quite exhausted, and the stud-groom in despair. He told the author that all the men had pulled "at one time and altogether" as well as their numbers would allow, and yet the foal could not be drawn six inches. On examination, the author found the foal's mouth open, and the lower jaw hooking the brim of the pelvis, as if the foal were trying to bite it. The slightest movement unhooked it, and the author at once, in less than two minutes, was able, aided by a slight pain, to bring away the foal, to the blank dismay and chagrin of the stud-groom and his numerous muscular assistants. Almost a similar experience has occurred to the author dozens of times; but one other case is conspicuous in his memory. At a farm-house, first an old, experienced shepherd, then an old cow-leech had struggled (the latter stripped to his waist, and lying face downwards for nearly twelve hours), in their efforts to deliver a cow, through a day and two nights. All the brute force possible had been employed. The nose and one fore foot was presenting, the right-knee, *flexed*, had caught below the brim of the pelvis, so that the more they pulled the tighter it was hooked. A gentle, steady push at the root of the neck, although not quite disengaging the knee, at least enabled the author to free it from the brim and deliver the cow in less than ten minutes, by the very gentle traction of two men only. When any one who undertakes the task requires great brute force as an aid, he does not know his business and should be dismissed. Great force injures the mother's soft parts, and is never requisite; because if the substance to pass is too large, it can be reduced; if it be in wrong lie, it can be put right; and if the lie cannot be recti-

fied, any required part can be amputated. When the lie is favourable, and the fit is so tight that the greatest force is necessary for *instant* delivery, a very moderate, harmless force effects delivery in a slightly longer time, by steady, harmless traction, causing a process of moulding and lessening of the soft substance to be withdrawn. It is quite a common practice for five or six farm servants to pull calves into the world in ordinary labour when the lie is favourable! No harm is done, either to the mother or her offspring; but that is because the mother's soft parts are forced open while still cool and well-lubricated. The same force applied when the parts of the mother are hot, dry, and swollen makes all the difference.

(*d*) *Hind end presentation. Both hind feet presenting.*

Diagnosis.—The lie may be made out by observing that the toes of the feet *look downwards.* Again, the hocks can be distinguished by their points and general form from the knees.

Treatment.—The delivery is as readily accomplished almost as any position, without altering the lie.

(*e*) *One hind foot presenting.*

Diagnosis.—The presenting toe looks downwards, and the hock distinguishes the presenting leg from a fore leg.

Treatment.—Cord the pastern tightly; then make out which of the two hind legs it is that presents. The great difficulty lies in getting the dropped hock up past the brim of the pelvis. It may be possible to reach the hock, but it cannot be flexed. In such a case a cord must be passed round it; then, whilst an assistant makes steady traction upon the cord, the obstetrist is to push the back of the limb well above the hock, at a part opposite the stifle, steadily away from him. This flexes the limb at the stifle, and the hock can be hauled above the level of the lower pelvic brim; in other words, the hock can be got into the passage, and delivery effected by steady traction upon the hock thus flexed and the presenting foot.

(*f*) *Breech Presentation.*—In this case the thick part forming the breech, with the thighs flexed upon the body, wedges the inlet.

Diagnosis.—The two points of the ischium (prominences on either side of the root of the tail) are felt, also the dock and anus below the dock.

Treatment.—The powerful throes of the mare are sufficient to expel the fœtus with this lie very often. At other times, and in most other animals, assistance has to be rendered. A cord, with a huge knot at one end, is to be carried between the thighs, and pushed up from below between a thigh and the part of the abdomen the thigh touches. This holds the knot till the same hand can reach it from above and draw it out. The thigh is now looped. It is well to try if the extra force we can now add to the maternal pains is sufficient to effect delivery; if not, cord the other thigh in the same way, and again try—not pulling violently but keeping up steady traction. If this be not sufficient, we must reduce the size of the fœtus—an operation beyond the ordinary amateur.

(*h*) *Hock or Hocks presenting.*—When both hocks present, a cord must be passed round both, and the breech pushed well back. Steady traction now either delivers, or one or both extremities are brought back sufficiently for a foot to be reached, and that leg brought out and corded. The secret of success lies in keeping up steady pressure upon the breech whilst traction is exercised on the limbs, so as to let as much of the breech and the limbs engage in the passage *separately* as possible.

As we have now explained the most common difficulties of parturition, and as the amateur will scarcely be equal to the more elaborate obstetric operations, such as evisceration, &c., &c., we now conclude our remarks on this interesting and important subject.

PATELLA LUXATED.—(*See* LUXATION OF THE PATELLA.)

PIPING.—This is one of the noises made in breathing, from some defect or deformity of the larynx. (*See* DEFECTS OF RESPIRATION.)

PHLEBITIS.—This term really means inflammation of *a* vein—*i.e.*, of any vein; or, it means inflammation of the veins generally in human medicine; but in veterinary medicine it has gradually come to be restricted to inflammation of the jugular vein, as a result of blood-letting from this vein. In this restricted sense it is here used.

Inflammation of the jugular vein after blood-letting arises from several causes:—1. It most often arises from using dirty fleams, especially those which have animal matter upon them from prior use. 2. The next most common cause is rubbing and dragging at the pin in cases either where the precaution of tying the head up for an hour after bleeding has been neglected, or, from the nature of the case, has been impracticable. 3. From including the vein wall nearest the outer wound in the pinning-up. 4. Any disordered condition of the blood itself which will irritate and inflame a wounded surface; or an irritable, disordered condition of the skin. 5. It may also have other causes, but the first and second are the most common, though the last would be were we not to avoid the operation of bleeding in the irritable skin diseases.

Treatment.—Take out the pin and remove all *débris* from the part with *warm* water and a sponge; give a cathartic (F. xii.), and low diet; keep the head tied up, and put on a spongio-piline poultice, or, if no spongio-piline is at hand, use large flannel fomentations, changed every hour, instead. Should matter form, it is to be let out at once. Should the swelling advance towards the head, the whole surface must be freely scarified. All measures must be taken, disregarding all attempts at saving a useful vein, which is usually impossible.

PHYMOSIS.—When the sheath is either so swollen, or has so contracted an orifice, from any cause, as to prevent the penis being drawn or pushed out, the condition is termed phymosis.

Treatment.—Wash out the sheath by syringing, and by any other means possible, with warm soap and water. If warty growths or ulcers are the cause, these must be treated according to the principles of treatment explained under these heads. If nothing else will do, the sheath-mouth must be slit up, and the large, everted, raw surface resulting treated as a simple ulcer would be.

POISONING.—In all cases of poisoning, seeing that the amateur may have no stomach-pump, and if he had perhaps could not use it, we must attend to three things:—1, the dilution or neutralising of the poison taken; 2, the protection of the parts upon which the poison is expected to act; and, 3, the expulsion of the poison.

Treatment.—Give two or three pints of raw linseed oil. If this be not forthcoming, give a large pailful of good milk to drink, or horn several pints down the throat if the animal will not drink it; and afterwards give a large, dissolved aloetic cathartic ball. Give, under any circumstances, plenty of well-boiled starch or flour gruel cold. Should there be violent pain with the poisoning, give morphia under the skin, or laudanum in two to three-ounce doses, if the action of the bowels to carry off the poison be not imperative. The laudanum may lock up the bowels, but the morphia by the skin will not. Should weakness, short of prostration, appear, it must be immediately met by stiff glasses of spirit and hot water, brandy being the best, and these repeated every two hours. The convalescence will have to be conducted according to the nature of the poison taken. Thus, after a narcotic no very special treatment is required, whilst after arsenic, in-

ducing as it does an inflamed condition of the stomach and small bowels, the food given has to be of the most bland description, and given in very small quantities.

Note.—To give a scientific classification of poisons, and to give the characteristic symptoms of these various classes, and the most appropriate treatment for each, would be out of place in a work intended for amateurs.

POLL EVIL.—When the upper part of the neck, at its junction with the head, becomes the seat of an abscess from any cause, which either bursts of itself or is opened in the ordinary way, the movements of head and neck prevent the abscess walls, after duly shrinking, from altogether coalescing or amalgamating, and one or more pipes or sinuses are left, which discharge in spite of all we can do, very often. This is so loathsome and so difficult to remedy, that the very strong term *poll evil* has justly, if not very elegantly, been applied to it.

Causes.—Chafing of head-collars, especially during irritable conditions of the skin, is a prolific cause; blows on the poll on going under low doorways, also from heavy whip-shafts.

Symptoms.—The animal carries his head very steadily, and pokes his nose out in doing so. The enlargement, heat, and tenderness on pressure are obvious when the abscess is ripening.

Treatment.—Our great object is to prevent matter forming by dispersing the products of inflammation. For this purpose tie the head tight up, to prevent movement; at once give a large dose of cathartic medicine (F. xii.); take away all food, but elevate a tub containing a bran-mash so that the animal can take it without lowering his head and with a minimum of movement. During the first forty-eight hours apply an ice-bladder, or rather make relays of men *hold it* on the part for hours at a time; also apply cooling lotion (F. lvii.) when the

ice is being withheld for a while. At the end of forty-eight hours, paint the swelling over with liquid blister (F. xlv.), and give an alterative bolus (F. xviii.). For ten days, blisterings, alteratives, securing the head so as to have a minimum of movement, and low diet must be persevered with. After this period much care must be exercised.

If matter form, it must be treated like an ordinary abscess, (*see* ABSCESS), and any sinus remaining must be treated as such. (*See* SINUS).

PRICKS IN SHOEING.—*See* WOUNDS.

PROUD FLESH.—*See* ULCERS.

PRURITUS OR ITCHING.—This condition is a symptom of various conditions and disorders. When, for instance, the horse is being well fed and too little exercised, his skin is apt to get itchy. Certain foods, such as beans, will cause it to appear, especially about the hind heels. The remedies of these are obvious, but often they require a cathartic (F. xii.), and a soda lotion (F. lviii.) applying to the part affected. Thread worms inhabiting the rectum cause intolerable itching, and cause the animal to rub his tail and quarters against any hard substance. (*See* ENTOZOA.) In mares, when there are no thread worms to account for incessant itching and rubbing about the tail, most likely the pruritus is situated within the vulva, caused by œstrum, by early pregnancy, or any tumour within the womb; by ulcers about the mouth of the womb, in the vagina, or on the opening of the vulva.

PUNCTURES.—*See* WOUNDS.

QUITTOR.—When matter forms within the limits of the hard, unresisting hoof, its only way of escape is *upwards*, when it is seen to "point" and burst somewhere about the coronet.

The abscess wall seldom shrinks and amalgamates, but leaves instead pipes or sinuses burrowing in all directions. (*See* SINUS.)

RECTUM IMPERFORATE.—*See* IMPERFORATE RECTUM AND ANUS.

RECTUM INVERTED.—Occasionally the somewhat loose mucous membrane of the rectum is thrust out beyond the sphincter of the anus, and appears outside under the dock as a large fleshy tumour.

Treatment.—Bathe it with warm milk and water and a soft clean sponge for half-an-hour, removing all dirt or foreign matter that may be sticking to it. Next, get a soft cloth, and having saturated it in the milk and water, make gentle, continous pressure *upon the centre* of the projection—taking care not to thrust the fingers through it—until it slips in beyond the anal sphincter. Thread worms, hard dung-balls, and anything which may have been found to cause the straining resulting in this accident must be attended to.

RETENTION OF URINE.—The urine may be retained in the bladder either from the bladder being too weak to expel it, or from some obstacle getting in the way of its expulsion. If the urine accumulates too long, and the bladder becomes over-distended, it becomes so *powerless* that it cannot contract on its contents, so that the urine has to be drawn off with a catheter. The vicissitudes of the road and the hunt sometimes are the cause of a horse holding his urine too long. Then, again, some horses will not stale in harness; therefore when they happen to be in the hands of thoughtless people retention is not uncommon. Ten minutes standing quietly alone in a stall will often bring about the desired effect; but the use of the catheter must not be delayed too long. Other causes of urine retention are rarer, such as polypus of the neck of the bladder,

urethra impacted with calculus, etc. The catheter will overcome almost any case whatever.

Note.—In all horses that are suffering from injury to the spine the bladder must be emptied by the catheter frequently if retention is present, as in these cases both bladder and rectum are often paralysed and incapable of expelling their contents. During lingering labour the bladder has to be emptied by catheter for two reasons: first, it may be that the distended bladder itself is protracting labour; second, the bladder, if distended whilst the fœtus is passing, sometimes sustains serious injuries.

RHEUMATISM.—This word is derived from the Greek *rheuma*, a fluxion, or a humour floating in the body, causing disease. There are two forms, the *acute* and the *chronic*.

Causes.—Exposure to cold and damp are the causes of the acute form; whilst the chronic form is often a sequel of the acute, but generally a separate constitutional affection, very common in old age.

Symptoms of Acute Rheumatism.—The animal moves with great reluctance; is stiff all over; fever is present. The pain, stiffness, and fever quickly increase, and one or more of the large joints is seen to be swollen, hot, and tender. In a little time the animal's skin becomes bathed in sour perspiration. Metastasis or shifting of the inflammation is very characteristic: the inflammation suddenly leaving one part and appearing in another. The inflammation elects for its attack the white fibrous tissues which enter largely into the composition of sheaths of tendons, fasciæ, fibrous membranes, and ligaments; the heart coverings, inside and out, and valves being extremely liable to attack. It is believed that lactic acid in the blood is the cause of this intensely painful and damaging disease.

Treatment.—It was said of this disease, as attacking mankind, that its only remedy was "six weeks and a blanket," but, thanks to medical discovery of the last decade, it can now be

said in the case of man, and, of course, in the case of a horse, "six days and salicylate of soda;" for this drug overcomes the malady in a very few days, often in a very few hours. The great pain calls for the free use of opium. Give two ounces of tincture of opium (laudanum) in water, then give a dram of salicylate of soda every two hours, carefully watching the temperature, which it brings down in a marvellous manner. Should the temperature fall decidedly, the remedy must be omitted; but the moment the temperature attempts to rise the remedy must be resumed as before. Warm woollen rugs and bandages must be kept on, loosely applied, and all cold air scrupulously avoided, so as to encourage the perspiration. Without removing the rugs, sponge over with a little hot water every six hours. The swollen, painful joints are greatly relieved by blistering with liquid blister (F. xlv.) which can be applied without any pressure. Blood-letting is not to be thought of, but the bowels are to be kept well going throughout—short of brisk purgation—with solution of aloes (F. xvii.) in half-doses. With regard to housing, a loose box free from draughts is to he preferred, but a stall is better unless the box is quite suitable. The diet, of course, must be of a fluid, laxative kind, such as sloppy bran-mashes, gruel, and hay-tea, with a little juice of a fresh lemon squeezed into each drink. When the thermometer shows the fever to have departed the diet must be improved in the most careful manner possible.

Complications, such as bronchitis, pneumonia, and pleurisy, may appear, and render the case quite beyond the amateur's skill; but the best thing he can do is to treat as if these had not occurred, except that he may apply his blister to the sides of the chest instead of the joints, if the inflammation be greater within the former than the latter. Should bronchitis be the form of complication, he will bring on superpurgation by using aloes; so that he must use raw linseed oil (F. xiv.) as a laxative, in the place of the solution of aloes.

Chronic Rheumatism.—This form affects the joints, and is not attended by fever, but the joint affected is thickened, and stiffer as a consequence, and important changes take place within it, rendering the horse lame in the part. This affects old, worn-out horses, and is seldom seen away from cab-shafts and in the lowest forms of service. Other forms of chronic rheumatism of shorter duration are lumbago, stiff neck, etc., which require three days rest, a laxative, and warm clothing.

RING-BONE.—This is an exostosis chiefly, or rather most often, affecting the bone next above the bone of the foot, called the *os corona.* Ring-bone is the bane of blood stock, oftener attacking the hind pasterns of well-bred young stock than all other ages and classes combined; at least, this is the author's experience.

Symptoms.—A ring of bone, or prominent round hardness, appears *immediately above* the top of the hoof, extending quite round the front half of the pastern, in so-called "low" ring-bone; but the ring is more in the middle of the pastern—but of exactly like nature in every other respect—in the case of what is called "high" ring-bone.

Treatment.—Deep firing, and one or two blisterings, is both efficient and the only treatment to be thought of in the early stage of the affection. The moment lameness in the hind extremities is seen in young blood stock, the pasterns must be closely watched from day to day, that down the horse may go and be fired the very day the affection is unmistakable. Early firing stops the progress of the growth, but after the first three months have past the growth is both complete and quite irreducible.

RING-WORM.—It is almost superfluous to describe the appearance of this common affection; but it may be described as a circular parasitic growth, on some part or parts of the

skin, which renders the part almost bald. The hair becomes dry and brittle, and breaks off; there is swelling and itchiness, and eventually the bald ring appears.

Treatment.—It is *first* necessary to remove the remaining hair by carefully extracting it from off and around the bald patch, or patches, with suitable forceps. After this has been thoroughly done in all the ring-worms we can find, we must take a soft brush and paint over the whole of the parts affected a lotion composed of equal parts of sulphurous acid and glycerine, three times a day for a fortnight, or longer, if it should be required.

ROARING.—This is a most grave defect of respiration, due to organic, and therefore incurable, disease of the larynx. The sound can be elicited by threatening the horse with a stick whilst he is standing against a wall, with "all his eyes about him." (*See* DEFECTS OF RESPIRATION.)

ROUND WORM.—(*See* ENTOZOA.)

RUPTURE.—This is a common term for HERNIA, *which see.*

SALANDERS.—This is a form of skin disease (eczema) affecting the place of flexion in front of the hock joint. The affection is better discussed under its true heading. (*See* ECZEMA.)

SAND-CRACK.—When a fissure, extending from above downwards, is found on the inside of the wall of the hoof of the fore foot, or the toe of the hind hoof, the horse is said to have a sand-crack. It may here be remarked that these cracks appear most often in the above situations because in the case of the fore extremities, being the weight-bearers, the greatest weight is borne by the *inside* of the *fore feet;* but in the case

of the hind extremities, being the propellers, the greatest weight is thrown on the *front* of the *hind feet*. This accounts for sand-cracks most often appearing in these situations, though very occasionally they appear in other situations.

Treatment.—As these fissures usually commence at the top and grow downwards, it has been proposed to isolate the crack from the part below by a transverse cut with a chisel, saw, or rasp. This is effectual in a few cases when thoroughly carried out. When the fissure extends but half way down the hoof from the top, complete isolation of the fissure is to be effected, either by a transverse cut or by a V-shaped cut, the point of the latter resting upon the fissure half way down, whilst its base is carried to the top of the hoof, on each side the fissure. We must remember that the weakly defective condition of the horn which has caused the fissuring must be attended to at the same time by resting the horse, with his shoes off and clips in their places, in a roomy loose box, and applying stimulating embrocations to the coronet all round, but more especially over the fissure. When the fissure is complete and reaches to the shoe it opens and shuts when the horse moves forward, and causes most painful lameness and loss of condition; often bleeding, inflaming, and suppurating from the movement alone; dirt also gets into it and irritates it. The treatment is now very different. The edges must be pared, and any matter that may have accumulated let out, and the foot poulticed for days, after the shoe has been removed. During this time a cathartic and lowered diet will do good. A radical cure would involve quite a year's rest and treatment, to enable the fissure to grow out; so that patching up is all that is usually aimed at. Another improvement consists in taking the shoe-surface of the horn away for an inch on each side of the bottom of the fissure, so that this does not rest upon the shoe.

In some cases, after due preparation, Professor Pritchard's operation may be performed. (*See* OPERATIONS.)

SCABIES—MANGE—ITCH.—These names are applied to a parasitic disease of the skin, which is mainly characterised, as one of its names implies, by uncontrollable itching. It is very highly contagious and due to small insects burrowing beneath the scurf skin. In the horse, the shoulders are its favourite locality, though it may inhabit any part, or the skin of the entire body.

Treatment.—The principles of treatment consist in removing the scurf skin, or as much of it as possible, then applying a dressing which will kill the insects. The clothing, or harness, or grooming utensil, or anything else which has come in contact with a mangy horse, must not be applied to any other horse without being cleansed, or to the same horse after he is cured, in case the disease appear afresh. Nothing kills the insects so well as the heat of an oven raised to 150° Fah. Whatever things cannot be so treated must be washed with carbolic soap, or with sulphur*ous* acid in water (half and half), or with carbolic acid in water (one part in one hundred), and exposed to the open air for a week or two afterwards. The affected horse must be regularly soaked in hot water and soft soap, and the parts affected scrubbed thoroughly afterwards, and the dressing F. lxi. applied every night, the washing off to take place every morning. Unless the scouring with hot soap and water be effectual, the parasiticide will have a far less chance.

SCALDS.—*See* BURNS AND SCALDS.

SCURFINESS OF THE SKIN.—This may arise from neglect of cleansing the skin, and during disorders which bring on great emaciation; or it may be a distinct form of skin disease of an almost incurable nature, characterised by the accumulation of scales of scurf-skin like sheets of mail upon a thickened red ground.

Treatment.—In the former case the skin must be properly

attended to and kept in as clean a condition as possible by good grooming; any disease of the digestive organs remedied, as it is usually part of the disorder of the digestive tract, through the sympathy the skin has with the lining of the stomach. After the digestive system has been set right the scurfiness will largely have disappeared, but may be quite got rid of by giving F. i. three times a day. When the scurf assumes the form of thick scales on a red ground, all the above directions for treatment hold good, but the arsenic requires pushing further, for a much longer time, and the bowels keeping freely going by bran-mashes at night, and abundance of liquids to drink, green food in summer, etc. The disease is almost incurable in this form, both in man and beast.

The itching present in any form of the affection must be treated by soda lotion, F. lviii.

SEEDY TOE.—When the toe of the foot affected is tapped with a small hammer and the tapping transferred to the fellow foot at the toe, the difference in sound is very perceptible—the affected toe giving a resonance as if hollow. If now we remove the horn of the affected toe in front, a crumbly, dusty horn comes rolling out; hence the name of seedy toe. The wall of the foot is quite hollow instead of being solidly adherent to the sensitive laminæ of the foot. The late Professor Dick attributed the affection to the clips in shoeing being too closely hammered to the foot, so that the horny wall of the toe was squeezed between the two clips, and made to bulge forward in front. It is often seen after laminitis, also after great and prolonged battering of the feet on hard metalled roads.

Treatment.—Wherever the horny wall is found detached it must be removed with the knife, no matter if half the foot-wall be cut away. If lameness be not present, and the animal very specially required, a week or two, but not

longer, may be granted before commencing treatment, which will lay the animal up two or three months. After cutting away what is requisite, and tapping the remainder of the hoof with a hammer, to see if any more places remain—as the toe may not be the only place—we must shoe with clips, put the pastern or pasterns through two courses of blistering, and turn out to grass in season until the horn has grown sufficiently down for the shoes to be nailed on.

SHOULDER SLIP—PINED SHOULDER.—The cup end of the shoulder-blade is so shallow, and so small in comparison with the large semi-spherical head of the arm-bone on which it glides: moreover, these parts are not bound together, except by a delicate membrane, but are held together by the large, powerful muscles which clothe them; that, when these muscles pine or waste away, the whole shoulder looks "pined," and the head of the arm-bone slips visibly outwards every time the leg is moved. This slipping movement has given the affection one of its names—"shoulder-slip."

Symptoms.—The whole shoulder is less than its fellow, from atrophy of the muscles. This is well seen on standing in front of the horse, and elevating his chin above our heads. The bony ridge of the shoulder-blade is well marked in the pined shoulder.

Treatment.—In the author's experience, when once the shoulder is thoroughly wasted, there is no remedy for it. If the sprain which causes it should be detected before actual pining of the muscle commences, rest, physic, and a couple of blisters over the shoulder point *may* arrest the disease.

SHOT OF GREASE.—This curious term is used by the vulgar in some parts of the country instead of the word "grease," whilst this again is a vulgar term for eczema of the skin of the legs. (*See* ECZEMA.)

SIDE-BONES.—Springing up from, and attached to, the wings of the coffin or foot bone, on either *side* of the foot, is a thin, elastic plate of cartilage, which we feel by grasping the foot at the back immediately above the hoof. The larger and more powerful the horse, the thicker, stronger, and less yielding are these cartilages. In some horses, especially large, heavy draught horses, the cartilage becomes converted into bone, and is therefore hard and unyielding, and may give rise to lameness; when the horse, lame or not, is said to have side-bones.

Treatment.—The parts may be deeply fired; but the author has less faith in any artificial remedy than in the natural adaptation which *sometimes* takes place in the foot to the altered circumstances. It often gives rise to incurable lameness.

SINUS.—Sinuses are the remains of the cavities of abscesses. When an abscess has formed, and is said to be "ripe," we have a soft fluctuating centre, and a harder periphery. The centre is filled with pus, which is enclosed in a wall of hard lymph; and the whole is surrounded by the less hard, but also less soft, products of inflammation. The wall of lymph *contracts*, and pushes its contents towards the skin, which it first thins, then ruptures; and the abscess is then said to have burst. After this the wall of hard lymph *still goes on contracting*, when all its sides finally amalgamate, and there is not only no cavity left, but the very wall of lymph itself is softened and absorbed, and vanishes from our feel. Should the movements of a part, such as the poll, or the withers, or the foot, drag upon the wall of lymph of an abscess of these parts, the contraction of the wall is interfered with, so that, instead of amalgamation and obliteration, remnants of the abscess cavity remain as pipes or sinuses. These are lined at first by granulations, but afterwards by a

smooth lining, very like a mucous or serous membrane. In surgery it is proverbially difficult to destroy any mucous tract; and the tract of a sinus, which secretes and pours out thin, ill-formed matter, is quite as difficult to destroy; hence the difficulty of curing poll evil, fistulous withers, and quittor, which are respectively sinuses of the poll, withers, and foot.

Poll Evil.—Under this head, in its proper place, directions have been given for treating the abscess, or threatened abscess, of the poll by remedies calculated to disperse the inflammatory products—"driving back" the abscess, as it is popularly called. Should our efforts fail, and the abscess ripen, we must evacuate it, and recognise our task as the most difficult one of trying to cure a sinus, or it may be sinuses—a task far beyond the skill of the amateur, as the operation of removing the granulations with the German spoon is required.

Fistulous Withers.—The abscess must be arrested by exactly the same means we adopt to arrest tumour of the poll going on to abscess. (*See* POLL EVIL, p. 115.)

Quittor.—When a horse has gathered a nail, or been pricked in shoeing, if the nail be not withdrawn but allowed to remain and press upon and irritate the sensitive parts, matter will form, and can only escape at the *top* of the foot. To prevent this, *see* Pricks in Shoeing, discussed under WOUNDS.

SIT-FASTS.—When the harness unduly presses upon a small portion of skin, death of the skin takes place and it becomes dry, hard, shrunk, and leathery, and anchored to the parts beneath it by unyielding fibrous bands, which prevent our pulling it away with the fingers. The living parts around it attempt to cast it off, and dissolve all its surroundings except the fibres. Hence, we find it surrounded by a raw, suppurating surface.

Treatment.—Cut the fibres which hold it down with scissors. Then keep the parts clean till they heal.

SLEEPY STAGGERS.—*See* MAD STAGGERS.

SNORING.—*See* DEFECTS OF RESPIRATION.

SORE THROAT.—*See* CATARRH.

SORE SHINS.—We have before noticed, under the heading FRACTURES, that if a fresh long bone be fractured, we find a powerful membrane closely adherent to all its surface, which holds its parts together after the fracture. This membrane (periosteum) holds the countless little blood-vessels which penetrate the whole surface of the bone, so that if this periosteum gets stripped off, the outer shell of bone dies. If, on the other hand, this membrane, so largely engaged in bone production, is over-stimulated, it at first forms a larger qauntity of bone over the area so stimulated. Should the stimulation amount to actual irritation, the membrane may inflame, and matter form which separates or strips off the membrane from the bone, and leaves the outer layers of bone, thus largely deprived of support, to die.

Sore shins is, for the most part, a disease of young racing stock, attacking the shin bones (metacarpals) from over-exertion and repeated concussions during the gallop.

Symptoms.—The part of the fore leg between the knee and pastern whose bony foundation is the metacarpal bone, becomes swollen and painful to pressure, and the animal gallops lame. Whilst in the stable he keeps shifting his fore feet, as if seeking relief; his temperature rises, his pulse quickens, and his appetite is impared; in short, he is feverish, from the pain of the inflamed periosteum.

Treatment.—Much depends upon the stage of the disease. At first, before the inflammation has gone far, rest, a cathartic, low

diet, and cold water bandages will arrest the affection. A stage further, and we find we must bleed from the toe and apply hot fomentations to the parts as preliminary treatment. Should the disease have been still further neglected and the fever run high, we must make deep and free incisions well down to the bone in several places—choosing the front of the bone for our incisions, and encourage the bleeding, and the escape of pus, should any have formed. The last two degrees of the affection necessitate a long rest; indeed, when once the periosteum has been unduly roused, a little too much exercise will develop the affection very quickly.

SPASM OF THE BOWELS—COLIC—GRIPES—BELLY-ACHE—FRET.—These and other names are given to an affection of the bowels whose nature is described under the article BOWEL DISORDERS. Veterinarians have gradually come to regard colic as a synonym of spasm of the bowels; whereas, *colic is only a symptom* in the form of a manifestation of pain in the abdomen, which may be *from many causes.*

Symptoms.—The horse shows colicky pains by kicking his flanks, looking round at his flanks, restless attitude, lying down, and rolling, etc. These symptoms occur *during a spasm,* which passes off to return in a few minutes. In the interval there are no symptoms of pain, but striking symptoms of uneasiness in expectation of pain. The pulse and temperature are quite normal, except that the former during a spasm is increased in frequency somewhat.

It must always be thoroughly remembered that if this morbid action keeps up for a few hours, inflammation of the bowels (enteritis) sets in; hence the necessity of frequent thermometric observations *at the mouth,* as we are interfering with the rectum with injections.

Treatment.—It is not so essential *what* you give, as the *time* you give it, in simple bowel spasm. Almost any hot stimulant

will do, if given early: a hot, stiff glass of brandy or whisky toddy, hot ale and ginger, even hot water and ginger. A copious warm soap and water enema should always be given, and repeated every half-hour, if necessary. Trot briskly about also.

Note.—It is always the *safest practice* to give a cathartic something like F. xvii. *as early as the draught can be prepared in every case*, lest the spasm depend on the presence of a foreign body, as it often does. In such a case, the bowel though spasmed is not at first inflamed, and a bowel before inflammation commences can be made to move on an irritant which may be causing spasm, but not after inflammation has once set fairly in. The inconvenience of physicking must not be put in the balance against *the chance* that the spasm may not be due to a lodged irritant.

SPINE INJURED.—The back is sometimes gravely injured, or even broken during casting with hobbles or ropes, from the animal making a fulcrum of his fore-pasterns whilst he doubles his back and struggles with all his might in his efforts to free his hind-pasterns—the power for doing so being mostly supplied by the muscular part of the loins. If the back actually breaks, the loud report or crack is heard, the hind-quarters become motionless, and the tail flaccid. If the back be sprained, the animal in rising sits up on his haunches like a dog. The gait afterwards is characteristic; the hind legs are dragged forward, wide apart, and awkwardly crossed when the animal turns round on the same ground on which he is standing.

Treatment.—If the back be broken the animal cannot rise, and has to be destroyed. Should the back be very badly sprained, destroying at first is the most economical practice for the owner, and saves the poor horse a great deal of suffering. A slight sprain may get well with a long rest in a loose box, or a run at grass.

SPASM OF THE DIAPHRAGM.—In ourselves spasm of the diaphragm is the cause of the familiar phenomenon called hiccough. This is so in the horse, but the characteristic sound of hiccough is absent, and the jerk of the diaphragm itself is heard as a loud thud, which shakes the body of the horse and is highly distressing and dangerous. The thud can be heard quite well outside the stable.

Causes.—It is almost always brought on by over-exertion, such as a prolonged gallop.

Treatment.—Keep the horse perfectly quiet in a loose box, and give half-an-ounce of laudanum in a stiff glass of hot brandy and water every hour till the phenomenon ceases, or until three doses have been given. Should the disorder continue over four hours, the pulse get weaker, and the lips livid, give a dram of tincture of digitalis, in weak, cold brandy and water every twenty minutes, till six doses have been given. After this, should the phenomenon continue, a fatal issue may be looked for. Persistent hiccough is of very grave omen in the human subject, but not more so than in the horse.

SPLINT.—When an exostosis appears on the canon bone, a horse is said to have a splint. Splints may be single or multiple, and may give rise to profound lameness, as they usually do when forming, or may cause no lameness whatever, as is usually the case after the splint has thoroughly formed, especially after a horse has passed his sixth year.

Splints cause lameness in two ways: first, during their formation—first six weeks or so; secondly, they may be situated so high up as to interfere with the knee joint, or be so situated that they interfere with the back tendons.

Treatment.—The treatment of splint must be during the time it is being thrown out, or at latest before the exudate has become thoroughly organised, otherwise it is of no use. When the splint is hot and tender, we take blood from the toe

with much benefit. Give a cathartic and low diet, under any circumstances, at the commencement of treatment. Hot fomentations and cooling lotions are valuable. When the heat and tenderness have gone—perhaps in ten days or so—a smart blister may be applied. Rest and patience always effect a cure of the lameness.

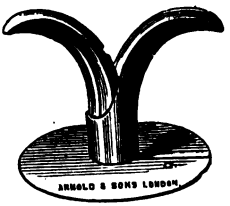
STRANGLES.—Generally during second dentition—though it may occur at any age—a specific eruptive fever, like our small-pox, chicken-pox, etc., attacks the horse; but instead of many small eruptions being scattered over the body, just one pretty large abscess forms, usually between the branches of the lower jaw, and so encroaches upon the upper part of the throat that it often threatens to strangle the horse, and he may, in bad cases, have to fight for breath. Hence the name strangles. When the abscess forms inside the body, the disease is called bastard strangles.

Like eruptive fevers generally, it has an incubative stage, then a second stage of fever, and then the eruption appears as above described.

Symptoms.—Till near the close of the incubative stage, there is no symptom of indisposition. The second stage is ushered in by shivering, great dulness, rising temperature, and other symptoms of fever, whilst added to these are all the symptoms of catarrh (*which see*). In from three to six days from the commencement of the fever and catarrhal symptoms, the abscess between the jaws appears, and the high temperature falls from two to three degrees. As the abscess ripens, the animal shows some disposition, though slight, for food.

Treatment.—Place the animal alone in a loose box, and give low diet, but no medicine whatever, unless the bowels become constipated; in that case give F. xiv. Green food in summer may be given, but all food should be placed on the ground, that the nasal discharge may get better away; it must

also be given in small quantities, so that there may be less waste, as all food long breathed upon and soiled should be replaced by fresh. The swelling between the jaws must be encouraged to ripen as quickly as possible, because an inflammation and its products close to, and perhaps involving, the larynx is likely to damage that important organ, and leave the animal a roarer, whistler, or with some defect of respiration. In cases of valuable horses, relays of men should be told off to keep up constant hot fomentation. In other cases, a stimulating embrocation (F. xlviii.) may be used night and morning, and a poultice applied, which must be changed every four hours. The moment fluctuation can be felt, the abscess should be evacuated, and the forefinger introduced, and the interior of the abscess all broken up. Fomentations are to be applied occasionally after evacuation, the parts kept clean and free from discharge, and the incision kept well open by occasionally inserting the finger.



FIELD'S NEW TRACHEOTOMY TUBE.

Convalescence is often slow, but all its requirements—as there is nothing peculiar about it—will be found under the article on nursing at the end of the book. The breathing often becomes very difficult towards the ripening period of the abscess, but seldom requires more than increased attention to fomentation. The act of coughing, brought on by difficult respiration, often bursts the abscess, when by neglect or oversight it has not been evacuated by the knife. Should great weakness show itself at any time, highly nourishing liquid food must be given every three hours, along with wine or brandy.

STINGS.—When the horse has been stung, with wasps for instance, all depends on the number and situation of the stings.

Of course, if half-a-dozen stings have been received on the body, a little fomentation with hot water, having a little carbonate of soda dissolved in it, is all that is necessary Should the stings be very numerous, death from irritative fever may take place in a very short time. In such a case the pulse quickens, the temperature rises, and a state of fever is quickly induced, which requires prompt attention. In such a case two ounces of laudanum in a little cold water must be given, and the dose repeated in four hours. The parts must be fomented with carbonate of soda lotion (F. lviii.), and the animal kept on low diet for a few hours. The danger from extreme irritation passes off in a few hours. One sting may be fatal if it be at the root of the tongue, or in the pharynx, and cause swelling that impedes respiration, unless tracheotomy be performed.

STOMACH STAGGERS.—*See* MAD STAGGERS.

STRING-HALT.—*See* CHOREA.

SUPERPURGATION.—This is a frequent disease artificially induced, and differs from diarrhœa in no particular, except that we know exactly what it is that is causing the continued liquid evacuations. When an ordinary cathartic (usually an aloetic ball) has been given, we expect it to lie twelve hours in the system before it purges, then to purge the animal twelve hours or less, and then to gradually "set," as ceasing to purge is called, or rather as the *liquid* evacuations replaced by *formed* motions is called. Should the watery evacuations extend over, at most, twelve hours, the cathartic is said to be "doing too much." Should the evacuations remain frequent and watery over eighteen hours, it is called superpurgation.

Treatment.—The same as diarrhœa.

SURFEIT.—*See* URTICARIA.

SWELLED LEGS.—*See* DROPSY.

TEETHING.—*See* DENTITION.

TETTER, DRY.—The diseases attended by scurfiness of the skin are often called dry tetter. (*See* SCURFINESS OF THE SKIN.)

TETTER, HUMID.—Simple eczema is often called humid tetter. (*See* ECZEMA.)

THICK WIND.—One of the numerous names given to DEFECTS OF RESPIRATION, *which see.*

THOROUGHPIN.—This is a bursal disease, and therefore treated under that head. Here it may be added that thoroughpin is a disease of hocks, having the point of the hock short, and is far less often seen where the point of the hock is long, for a truly physical reason: the tendon attached to the point of the hock presses upon the bursa, which in its over-distended state is called thoroughpin, more when the point of the hock is short, but is further removed from the thoroughpin bursa, and therefore presses less upon it, when the hock-point is longer. It follows, therefore, that a bad thoroughpin in a hock having a long point shows a worse state of the bursa than the same amount of thoroughpin in a hock with a short point. It is the bursa of the tendon of the "flexor pedis perforans" that is the seat of the dropsy, or that is over-distended, which causes thoroughpin. (*See* BURSAL DISEASES.)

THROMBUS.—After abstracting blood from the jugular vein, the pinning-up arrangement is sometimes seen to be swollen to the size of an egg. This is due to an accumulation of blood between the vein and the skin, and not unfrequently happens during the time the blood is flowing. It has two distinct causes: either it is due to the skin being pulled away from the vein during the act of pinning-up, or from the skin being dragged downwards before the vein is tapped, or when

the blood is flowing, in which case the opening in the vein and in the skin get removed from the same straight line. The latter cause is far the more frequent.

Treatment.—After the bleeding place has been neatly pinned-up, no notice need be taken of the thrombus, the dry sealing of the blood must be relied on for keeping the air from it; then, by keeping it from being unduly moved, it will, in a week or two, all disappear by absorption. Should putrefaction or suppuration appear, the swelling increases, and the parts become moist; so that the pin must be removed, hot fomentations applied, and the parts treated as directed under PHLEBITES.

THREAD WORMS.—*See* ENTOZOA.

THRUSH.—When a thin, dirty, foul-smelling discharge appears in the cleft of the frog, the horse is said to have a thrush. The discharge comes from the sensitive parts beneath, but may either do so from a local disease of the parts which give rise to it, or it may be caused by a constitutional affection. The author believes that thrush in the horse, when not a local affection, is the same in every respect as "fistula in ano" in the strumous human subject. When thrush has a local origin, its cure is very easy; but by no means is this the case when it has a constitutional origin. When local, it appears in one foot only; but when constitutional, two, three, or it may be all four frogs discharge. "Leggy," flat-chested horses are often the subjects of constitutional thrush.

Treatment.—If the affection has a local origin, place the foot in a poultice for twenty-four hours, and give a cathartic (F. xii.) Afterwards cleanse the cleft of the frog by see-sawing a little tow, or soft band, through it; then ram a little calomel and tow down to the bottom of the cleft with a sharpened piece of wood. When local in origin, and when all the heat

has gone from the foot, this treatment is prompt and effectual; but when it has a constitutional origin, it is needless to add that the calomel has only touched the outlet of the discharge, which has for origin the state or condition of the whole system. Should calomel stop the discharge, and too much inflammation be present, the leg may swell, and the animal become feverish. In such a case the discharge must be brought back at once, by placing the foot in a hot poultice. It is neither safe nor wise to stop a thrush suddenly, without considering its surroundings. When it has existed some days it is mostly in a chronic, gleety condition, and may usually be summarily dealt with as above.

TOOTH-ACHE.—This is by no means an uncommon affection of the horse, especially in old age. It is quite superfluous, however, to define the affection, seeing that it differs in no particular from the same affection in ourselves.

Causes.—These may be local and confined to the mouth, the tooth, or its fang; and, we may add, any ulceration attacking the antrum, and spreading to the fangs in its vicinity. Disorder of the stomach also gives rise to tooth-ache.

Symptoms.—Food is either altogether refused, or is taken in a half-hearted manner; saliva dribbles from the corner of the mouth; the head hangs dull and stupid looking; whilst neither the pulse, the temperature, nor the breathing indicates any fever.

Treatment.—Tooth extraction is among the most formidable operations in veterinary surgery in the case of the molars (the teeth most often at fault); so that it is useless to describe it in a work like this. In two days or so, if the tooth be not extracted, the affection will vanish for the time by keeping the animal in-doors, out of cold draughts, and giving a little soft, easily-masticated food, gruel, &c., to support the strength till more solid food can be masticated.

TREAD.—From awkward crossing of the feet, the shoe, especially the calkin, of one foot often crushes the coronet of the fellow foot, and causes what may be, if not properly treated, a formidable wound, with after consequences which may include quittor itself.

Treatment.—Remove the shoe, and after removing all loose rags of horn, place the foot in a poultice for thirty-six hours. After this the parts only need keeping free from dirt and discharge, and painting over with a little Friar's-balsam, or with styptic colloid. In worse cases, when we have reason to suppose the soft parts are mutilated much below the level of the coronet, the horn all over the wound must be carefully but freely removed with a searcher, for the purpose of removing all pressure, also to favour the escape of matter as it forms. This must be done thoroughly and once for all before putting on the poultice. The poulticing may have to be prolonged, at any rate it must be kept up whilst the lameness lasts, and the parts all the while must be kept freely open.

TRUMPETING.—*See* DEFECTS OF RESPIRATION.

UDDER, INFLAMMATION OF.—*See* MAMMITIS.

ULCERS.—The nature of ulceration and ulcers has been more freely and fully discussed in the introduction, under INFLAMMATION. Here we may classify ulcers with a view to their detection and treatment.

Definition.—An ulcer may be said to be any broken surface whose natural protective coverings have been removed by the process known as ulceration. In other words, ulcers may be said to be open wounds, having granular surfaces in a more or less unhealthy condition. These *unhealthy conditions*, which prevent healing taking place are:—1. From under or defective action. 2. Excess of action; and, 3. Some peculiarity of action.

First Class.—Weak Ulcers.—The surface (granulations) of these is rugged, pale, and flabby-looking, giving off a thin, watery discharge. Their edges are swollen and œdematous (dropsical).

Treatment.—Apply stimuating lotion (F. lv.) to the surface several times a day, and allow a little hand-lead exercise three times a day, small malt-mashes, good hay, and a little corn. Of course all obstruction to the circulation is to be removed.

Callous Ulcers.—In these the surface is depressed and smooth, and surrounded by hard, white, raised edges. The colour of the surface is darker than the weak ulcer, and may be of a dirty-brown colour. The discharge is thin and slimy.

Treatment.—Apply mercury blister (F. xliv.) all round the edges of the ulcer, rubbing it freely in with one finger. Feed and exercise as in weak ulcer.

Second Class.—**Inflamed or Irritable Ulcer.**—The surface and edges of these ulcers are dark-red in colour, also ragged and irregular in outline. The discharge is frequently bloody, or mixed with blood. The horse attempts to get at it, and tear it with his teeth, from the itching and pain it often occasions.

Treatment.—Hot fomentations, poultices, and cathartics. Apply lead and opium lotion (F. lvi.) several times a day, to allay the inflammation and irritability.

Sloughing Ulcer.—The sloughing ulcer is often seen in the horse. Any ulcer may become a sloughing ulcer. When this is so, the area of the ulcer quickly extends in all directions and the surface seems to melt away and deepen.

Treatment.—Apply fuming nitric acid to the surface after a poultice has been applied for six hours, and give stimulants such as wine, malt-mashes, good hay, and oats, etc.

Strumous, or Scrofulous Ulcer.—The ulceration in these

may be confined to the skin, but more frequently the skin is undermined by ulceration; the skin thus undermined being thin, discoloured, and riddled with one or more small openings, which communicate with the ulceration beneath. The discharge is often thin and curdy.

Treatment.—Feed very liberally on wine, malt-mashes, beef-tea, good hay and oats, etc. Give iron (F. xxxviii.) three times a day. The open air in fine weather is to be freely sought. The ulcers themselves need little more than keeping clean, and stimulating with zinc lotion (F. lv.).

Note.—We purposely leave out of consideration cancerous and rodent ulcers, as being beyond the scope of this work. Of course, if such should be encountered and no professional advice be near, symptoms must be treated, especially pain by opiates, and everything done to promote the bodily health of the patient, as all ulcers heal much more quickly and are very greatly influenced by the state of the general health.

URINE, BLOODY.—*See* HÆMATURIA.

URTICARIA—NETTLE RASH.—This is an acute affection of the skin, coming on suddenly and sometimes attended with the slightest possible amount of fever. The rash is irregularly distributed over the body, and also varies slightly in colour, sometimes being a bright red and covering most of the body; at other times it occurs as red or white wheals. It is always accompanied by a sensation of stinging or itching, causing the horse much uneasiness, as shown by his seeking objects to rub against.

Causes.—Most often it is due to indigestion, from eating certain kinds of food, or from drinking cold water when heated. Mental emotions will cause it, so will worms, and the irritation of teething.

Treatment.—Give a cathartic (F. xii.), and whilst this is in

the system, and afterwards if necessary, also give bicarbonate of soda in half-ounce doses three times a day, dissolved in water. The itching calls for prompt attention, as this alone brings on a good deal of feverishness if neglected. Carbonate of soda (F. lviii.) sponged over the body three times a day, or oftener, is very efficient for allaying this, but it may be used oftener if thought necessary.

Strict attention must be paid to the digestive organs, and bran-mashes freely used for a few days, and all stimulating foods, such as beans, withheld.

VAGINITIS.—Imflammation of the vagina, a part of the female genital passage, is called vaginitis. It may be due to thread-worms creeping up the parts after escaping from the rectum, or from the injury by a stick or whip-stock pushed up by mischievous persons. It not unfrequently happens after prolonged parturition, but is seldom in the mare due to a specific cause (clap), as in the cow.

Symptoms.—A discharge emanates from the part, the tail is held out more or less, and the mare keeps shifting her hind feet. There may be a little fever present also. Much restlessness from pain is seen when urine is passed or the bowels moved.

Treatment.—Place on low diet in a loose box, and give a cathartic (F. xii.). An attempt may be made to inject the part, but the operator must secure the mare in some way—by, for instance, having a fore leg held up whilst he stands behind a stall, or other fixed object that can shield his legs from a blow with the mare's hind feet. For the first five days, warm barley water alone should be injected, adding an ounce of solution of opium to each pint of injection if the inflammation is great. After the fifth day, a little weak sulphate of zinc injection may be used (two grains to the pint of water), every three hours for three or four days. If mechanical force has been used, any

wound produced must be treated in precisely the same way as if it occurred elsewhere. Above all things, take care to allow free escape for all discharges.

VENTRAL HERNIA.—This term is usually employed to express technically the fact that a part of the bowels is held only by the skin, having broken through the side, or floor of the abdomen elsewhere than at the umbilicus, or the inguinal regions. When a cow's horn, or any blunt, rigid instrument is pushed violently against the tense abdomen, the skin may remain quite entire, but a hole may be made through the muscles and other coverings down to the bowels, through which the bowels protrude (ventral hernia), and this might be mistaken for an abscess, but for its being *soft all over*, as if filled with air. (*See* HERNIA.)

VOMITING.—In the horse, vomiting is very seldom seen, but when it does occur, the food comes mostly down both nostrils. Complete vomition in the horse is the gravest symptom known, and is almost always the forerunner of death. After death, various conditions have been found: ruptured stomach, ruptured intestines, etc.

WARBLES, OR GRUBS.—*See* ACNE.

WARTS, OR ANGLEBERRIES.—These nuisances consist of the papillæ of the natural, true skin taking on increased growth, and becoming covered by several thicknesses of epidermis or scarf skin, which give the wart its horny appearance. They appear most on the skin of the abdomen, lips, and eyelids.

Treatment.—If they are numerous, the horse must be prepared by a cathartic (F. xii.), or rest and lowered diet, for being operated upon after being cast. The warts are then to be seized, one by one, in iron clams, and cut off with a red-hot

iron, a firing-iron being most convenient. Immediately after all have been removed, the root of each may be touched with a glass brush that has been dipped in the strongest acetic acid. If the horse has not been previously prepared, he must have cathartic F. xii. immediately on rising from the operation, and be kept on low diet, as a good deal of swelling may possibly occur and some slight amount of fever. The sites of the warts will require no further treatment.

In cases of single or very few warts, it is best to fire them off when they can be easily got at, without casting, but otherwise treated as if the animal had been cast, if thought requisite. When warts appear on the lips or eyelids, they cannot well be fired off, especially in the latter situation. It is then better practice to snip them off with sharp scissors very close to the skin, and dress with the acid freely, if we are sure that the eye can be avoided.

WEED—GREASE—SHOT OF GREASE.—*See* ECZEMA.

WHEEZING.—This is one of the noises made in DEFECTS OF RESPIRATION, *which see.*

WHIP-WORMS.—Another name for thread-worms which infest the rectum. (*See* ENTOZOA.)

WHISTLING.—*See* DEFECTS OF RESPIRATION.

WIND GALLS.—*See* BURSAL DISEASES.

WITHERS, FISTULA OF THE.—*See* SINUS.

WOLF-TEETH.—When a small milk tooth remains in front of the foremost upper molars—a very common occurrence—grooms and carters have an idea that pain is caused, and clamour to have it removed. They can easily be removed without giving pain by a small pair of forceps (*see* OPERA-

TIONS); and whether the cause of tenderness in feeding or not, they are certainly of no use.

WOMB DOWN.—*See* INVERTED UTERUS.

WOUNDS.—These are among the most important events that happen to horseflesh, and every owner of live stock ought to know something of wounds and their ways. For example, to-day we may have a valuable carriage-horse, or hunter, or cart-horse pricked in shoeing, which by ignorance or neglect becomes a quittor, so that very frequently we may shoot the horse as soon as we like. In a hot July the flies tease a valuable horse and make him break, or jump, into the next field, and he gets "staked"—the stake almost separating his shoulder from his body—and he either dies from shock, or becomes an invalid for months, and lame on that shoulder. Again, a cow may gore the flanks of our prize bull, and not knowing what to do till aid arrives, we allow the bowels to emerge till their increasing bulk renders it impossible to put them back, and the butcher has to be sent for when the vet. arrives. And so forth. Frequently it is not so much the skilful treatment of a wound from first to last, as knowing what initiatory steps to take till higher skill arrives. Opening out *well* the horn all around the nail-hole, and placing the foot in a poultice, favours the escape of matter *downwards* in pricked foot, and prevents quittor. A powerful dose of brandy and opium may save life from direct shock. Supporting the gored flank with a bed-sheet, dipped in warm milk and water, will prevent more bowel escaping than can be safely replaced. Wounds of one sort or another are amongst the commonest ailments affecting our live stock, so that we must explain their nature and treatment at some length.

Definition.—A wound is a solution of continuity in any part of the body, suddenly made by anything that cuts, or tears, with a division of the skin. (*Wiseman.*)

We divide wounds into four kinds:—1, incised; 2, lacerated; 3, contused; 4, punctured.

(1) Incised Wounds.

These are familiarly known as "cuts," and are usually laid open freely to the air. They may consist of a division of any part or parts, but when blood-vessels are divided we have much bleeding. When nerves are divided, we may have numbness and want of "feeling" in the parts supplied by the nerve or nerves. We can tell by our own experience that a horse with an incised wound suffers pain of a burning, smarting character, depending largely upon the extent and situation of the cut. The amount of bleeding depends upon the part cut, as well as on the size of the cut surface. All other things being equal, the nearer to the heart or a large vessel the freer the bleeding. The amount of separation of the lips of the cut depends on the *direction* of a cut; thus, a cut across a muscle will gape more than one lengthwise. The *elasticity* of the cut surface influences the gaping of the wound; thus, bone and ligaments retract little, or not at all, whilst skin and muscle retract a great deal.

Treatment.—The treatment of cuts or incised wounds requires strict attention to four particulars: 1, arrest of bleeding; 2, removal of foreign bodies, such as dirt, etc.; 3, exact coaptation of the sides of the cut; 4, the prevention of decomposition within the wound.

1. *Arrest of Bleeding.*—This has been dwelt upon before. (*See* Hæmorrhage.)

2. *The Removal of Foreign Bodies.*—This must be done thoroughly, and once for all, without rough handling of the parts. A clean sponge and clean cold water will wash away most loose material; the fingers, or a pair of forceps, or pliers, may be required to remove anything sticking into the wounded surface. Remember that anything left may prevent healing.

3. *Exact Coaptation of the sides of the Cut.* — Our first instinct is to close the wound; and the various means used, and recommendations for this purpose among savages and among the civilised uneducated, are extremely numerous and diversified, a large proportion of our folk-lore consisting of practices and incantations on this subject. The ancients seemed to dread the admission of air, and poured oil and wine, also various balsams, into the wound for this purpose. Chewed tobacco-leaves, etc., are still plastered over a wound to exclude air.

When we have our choice, after stopping the bleeding and removing all foreign bodies, it is best to wait till the surface or surfaces of the cut are *glazed over with lymph.* After this has taken place, or without it taking place, we bring the surfaces of the cut together by 1, sutures; 2, plasters, etc.

Sutures.—These are of several kinds, but those of most service are the *figure of eight suture*, and the *interrupted suture.*

The Figure of Eight Suture. — This has become quite familiar to owners of live stock on account of its being employed to secure the wound made in bleeding at the neck. A common straight pin, having its point pinched by the teeth, is inserted within half-an-inch, more or less, of the edge of the cut, and brought out half-an-inch, more or less, from the opposite edge of the wound. A piece of very soft tow is now wound round the two ends of the pin in a figure of eight. Should the wound gape widely, a larger and longer pin will be required, and a director to facilitate its insertion. Under OPERATIONS (p. 197) the process is described and illustrated.

This suture has many advantages: it can be used by any one with "nerve," ordinary judgment, and a very ordinary use of his fingers; as many can be inserted as required, the insertion of each being quite independent of the rest; the materials are to be found in every house in the kingdom—if tow be not

forthcoming, soft string can be used; no skill whatever is required in their withdrawal, as the head of the pin has only to be seized, rotated, and the pin withdrawn, and all is complete; the pin being of metal, no irritation follows, and therefore the time of withdrawal is a matter almost of indifference, enabling us to keep the suture in till solid union has taken place; the tow, or string, lies lightly over the extreme edges of the wound, and keeps them in close apposition, and steadies them, thus favouring the healing process; and lastly, there is no dragging upon the tissues by the metal, therefore it has no tendency to cut itself out. The number inserted, and the size of the pin used, must depend upon the size of the surfaces to be held together; thus, a deep cut requires a suture to dip well down in its hold below the surface, and has to be inserted and reappear well away from the edges of the wound, therefore it must be a long pin, and it must also be a thick pin, to bear the weight and the drag which the tow exerts. A cut requires a suture in at least every inch of its length; therefore, the length determines the number of sutures, as the depth and length combined determine the length and stoutness of the pins used. After neatly bringing the edges of a wound together it is well to paint over them styptic colloid.

After the above suture, the next best, and the one most commonly used for several reasons, is

The Interrupted Suture.—These may be described as needle and thread sutures, only instead of the ordinary housewife's straight, round needle, we use a crescent-shaped needle with a triangular point; and instead of hempen or cotton thread, metallic thread (well-annealed silver) is used, because metal creates little or no irritation in the flesh, whilst cotton, hemp, silk, etc., act like a seton, and matter forms round them. After choosing the size of the needle and thread (being guided in the choice by exactly the same considerations as in the choice of pins in figure of eight sutures), we insert stitches as we would

otherwise insert pins in the figure of eight, and make each stitch complete in itself; that is, after being drawn through the flesh the wire is tied in a double knot, care being taken to bring the edges of the wound firmly together but not too forcibly, or the wire will be dragged upon and cut its way out. The difference of effect between this and the figure of eight suture is seen in two ways more especially: with the stitch, the drag on the wound is on the *entrance* and *exit* of the wire, or thread; whilst with the rigid pin in the figure of eight, the drag is more evenly distributed on the *whole length* of the pin, and therefore there is a less tendency to cut itself out. Secondly, the soft, broad tow overlapping the edge of the wound keeps the edges of the wound in better apposition than the narrow wire or thread, which is of much importance, especially in large gaping wounds.

Every stitch of an interrupted suture must be examined daily, and if threatening to cut itself out it must be removed; otherwise, the longer the stitches remain the better up to the twelfth day.

To withdraw the interrupted suture, cut the wire or thread with scissors, and then seize the knot and gently withdraw the stitch.

The Continuous Suture. — The continuous suture, or glovers' stitch, hardly requires describing. It may be done with wire or thread. The stitches are to be nearer together than in the interrupted suture, which has the advantage of bringing the edges of the wound into better apposition. In wounds of the bowels this is the commonest form of stitch, otherwise it is rarely used. In withdrawing it, each stitch must be cut across. If the amateur think he can manage the glovers' stitch better than the interrupted suture, he had better choose the former. Should the amateur arm himself with these little useful appliances, he had better use carbolised catgut in place of either wire, or common thread.

The Quilled Suture.—This suture is less likely to be re-

quired, and the amateur is less likely to be able to use it on account of the apparent difficulty of insertion, though there is no real difficulty in doing so. All he requires is a curved needle armed with a *doubled* silk thread and two stout quills. He inserts his stitches exactly as in the interrupted suture, but unthreads the needle only, instead of tying the thread ends together, after passing the needle through the flesh each time, thus leaving all the thread hanging loose until every stitch is complete. He then inserts a quill into the loops, and draws upon the thread of the opposite side, places the remaining quill in position, and tightens up every thread before tying it.

The advantage of the quilled suture is very great where the *sides* of a deep longitudinal wound require keeping in firm contact. Care should be taken to pierce the wound, and bring out the needle at a good distance from the edges of the wound, also to pierce deep enough. Of course, the holes made by the needle on each side must be in as straight a line as possible, on account of the level bearing of the quills.

Dryness of the edges of a wound, after being brought neatly together, is essential to healing without suppuration. For this purpose, the entire edge, after completion of any sutures we may choose, may be smeared over with a feather dipped in styptic colloid, or with Friar's-balsam.

Movement must be strictly prohibited, or provided against, in all wounds adjusted by suture which we intend shall heal right away. The least movement tears and breaks down the delicate organisms on the surface of the adjusted wound, when either new organisms have to be generated, or, what is worse, the torn organisms act as irritants and set up suppuration.

Caution.—If unmistakable signs of pus or matter make their appearance after we have sewn up a wound, free vent must be afforded for the matter, either by: 1, taking out all or some of the stitches; 2, loosening all or some of the stitches;

or 3, inserting a drainage tube, as described in PUNCTURED WOUNDS.

It is very disappointing to see our best endeavours thwarted; but the difficulty must be acknowledged and faced.

(2, 3) LACERATED AND CONTUSED WOUNDS.

This description of wound may be defined to be one whose edges and sides are more or less torn.

The tearing and contusion which often accompanies it may present every degree, from a contused cut over a superficial bone like the shin, to the crushing and laceration by a cannon shot. They are usually inflicted by blunt instruments, such as stones, stakes, projecting nails; also by the shoes, as in treads, speedy-cuts, and over-reach.

Characters.—Their lips are irregular and torn, less gaping than incised wounds, but they are surrounded by more ecchymosis and contusion, and have a decided tendency to slough at their sides. There is usually very little bleeding, and the pain (judged by human experience) is of an aching or dull character.

Treatment.—This is divided into two distinct processes, on account of the two distinct alterations which a lacerated and contused wound undergoes. Nature heals a contused and lacerated wound by causing the lacerated parts to slough, and the surfaces from which the slough comes to heal by granulation; therefore, our treatment is to do all we can to hasten the separation of the slough; then to treat the granular surface, which remains as a simple ulcer.

First, clean the parts thoroughly by fomentations or poultices, removing by any other means any substances that may be piercing too persistently to be removed by these means. Rags of tissue may be snipped off with scissors; *but, however ragged and torn the skin may be, it is never to be cut off, but left, and encouraged to remain.* If it live, or the

greater part of it, much is gained; whilst if it eventually slough, no harm has been done in attempting its preservation. To preserve a flap of skin from sloughing, a few interrupted sutures are to be used, and the parts held *in situ* by a little lint, or absorbent cotton, soaked in styptic colloid. Continuous poulticing, or persistent hot fomentations, greatly contribute to hasten the sloughing process; whilst after this the clean, granular surface requires treating as a simple ulcer.

(4) Punctured Wounds.

A punctured wound is one having great depth in proportion to its superficial or surface opening; as an illustration, we may mention pricked foot in the act of shoeing. In this case the external opening is so small that it can hardly be seen, whilst the depth of the wound may be two-thirds the length of the nail. *Their great liability to inflammation, and the smallness of the channel for the escape of inflammatory products,* renders them the most formidable of all wounds. The immediate dangers attending punctured wounds are, the wounding of deep-seated blood-vessels and nerves, and the traversing and injuring of great cavities and their contents.

Treatment.—The principle of treatment of any punctured wound consists in making *a free opening* for the escape of pus and other inflammatory products. The stock-owner will pay dearly for his whistle if this golden maxim be lost sight of.

Punctured Feet.—When shoeing horses, smiths often drive a nail either too near the quick or actually into it. Horses also in travelling frequently "gather" a nail—*i.e.*, a nail, or other sharp pointed body, may pierce the foot in travelling.

Symptoms.—The horse is lame, and in a few hours the foot is distinctly warmer than its fellow. When the shoe is removed, and the foot searched with a smith's drawing-knife (*see* Operations), the nail-holes must each in turn be cut down

upon, and if dark matter (pus) escape, the discovery is made. Failing the visible escape of matter, we must apply powerful pressure to each nail-track with the smith's pincers. The smith who has nailed on the shoe and pricked the foot must not be relied on in searching and applying pressure. He knows the wounded nail-track quite well, and will only make pretence in applying pressure upon it, whilst his pressure will be real enough on the uninjured nail-tracks. His method is to pare well the injured nail-track, but not sufficiently well; then declare the horse to be lame "somewhere," and advise a poultice being applied to that foot; or, he "gets at" the groom or coachman, and thus gets admittance to the stable, and opens out the nail-track to the best of his ability, then orders a poultice. All this may be well enough, but the amateur must seek professional advice, and have the bottom of the nail-track *opened thoroughly out.* In case no veterinarian be obtainable, the arduous and important duty must be thoroughly performed by the smith, under the eye of the one most interested—under the threat, if occasion require it, of taking away the shoeing from the smith. An opposition smith would quickly find the wounded nail-track; but, failing this, he might, if unscrupulous, use his pincers, and bruise the foot so as to cause foot lameness. On the whole—no veterinarian being obtainable, and the amateur being unable to search the foot himself—he had better flatter and coax his own smith into finding the lame spot, and see himself that it is *well* opened out, under the pretext, if need be, that he can spare the horse the next few weeks. After opening out the bottom of the nail track, a poultice is to be continuously applied, a cathartic given, and the horse rested till all signs of heat, tenderness, and lameness have quite disappeared. Anything to avoid a quittor.

Gathered Nails usually pierce the sole at the point of the frog, for the simple reason that this is the highest point in the

arch of the sole. It must be opened out, poulticed, and treated the same as a prick in shoeing.

Punctured Wounds of Soft Parts.—These have their peculiar dangers, for the reasons above described. If muscles have been pierced, the inflammatory products, especially pus, fail to escape, and may meander in the tissues forming the sheaths and septa of the muscles, for inches, and, in some cases, feet away from the original wound-track. Thus, the author saw a horse which a vicious stableman had stabbed with a two-pronged hay-fork, one prong entering the back of the thigh half-way between the hock and tail. For want of being attended to at the time, the small opening of the wound was only faintly discharging a dirty, watery material; whilst the whole thigh, from the stifle to the tail, and from the "hoven" bone to the hock, was one bag of matter. Therefore our duty is obvious.

Treatment.—Get a quill with a whole barrel and probe the wound to find its direction and depth. After doing so, introduce a pointed bistory as far as it will go, and bring it out with a sweeping cut; then introduce tow, dipped in Friar's-balsam, to the *bottom* of the wound. Our object is to cause healing to commence at the far end of the wound by granulation, and to keep a free opening for all discharges. A still better plan is to tie in a drainage tube. To make a drainage tube, get a piece of india-rubber tubing about half-an-inch or so in diameter; cut it the length of the wound, then cut out a dozen or a score holes along its whole length, and, after dipping it in carbolised oil (carbolic acid one part, olive oil nineteen parts), tie it in the whole depth of the wound by two pieces of string, piercing it near the end which is intended to protrude from the wound. This effectually drains off discharges. It can be taken out, washed, re-carbolised, and replaced as often as we choose; and as the wound heals from the bottom (and therefore grows shorter),

the tube can be shortened, by being cut little by little, from day to day, as required.

Note.—The author strongly recommends *all* punctured wounds of soft parts to be treated by the drainage tube; but in case this be not thought advisable, the amateur must be careful, in placing tow, &c., in a long, narrow wound, to leave a tail of tow to seize hold of, as tow left in a wound may be the source of much suppuration and perplexity.

HOW TO NURSE A SICK HORSE.

Those who undertake this delicate task can never lose sight of certain facts. In the first place, the sense of smell in the horse in health is highly acute, but rendered even more acute in disease. This, coupled with the fact that he is at all times a dainty feeder—taking care to examine every meal beforehand by the sense of smell—renders it a nurse's foremost duty to secure absolute cleanliness in mixing, cooking, and presenting food to the horse, especially in the lowest states of sickness. Every utensil must be spotlessly clean and free from smell; the hand even must not come in contact with the food, if this can be avoided.

Up to this moment those responsible for the nursing of sick horses too often use the stereotyped order, "Give a bran-mash and aired water," in every case requiring sick diet. It would be an insult to the reader's common sense to explain that this treatment is barbarous to the last degree, and sacrifices lives that might be saved. A large, sour, bran-mash, in a sour, wooden manger, is found the day after it was placed there quite untouched by the poor sick creature; and, often with coarse language, and even blows, it is exchanged for a fresh mash made of the same insipid materials, and placed in the same sour place just occupied by the disgusting mess there before it. The horse dies, and the doctor's drugs have failed to save him!! The next grade of intelligence above the foregoing, or below it—the author is not sure which—thinks of port wine and brandy. What sour bran-mashes have failed to do, perhaps fire-water will effect; then the diet is as follows:

a mash every morning, with wine or brandy night and morning. In the lowest depths of sickness, when life is thus trembling in the balance, very few think of the sliced carrot, the pulled bread, the small malt-mash, the nibble of oatcake, the handful of fresh green clover, the biscuit, the draught of fresh, pure, cold water, the egg and milk with brandy mixture, etc., which will turn the balance in favour of life and recovery, and act as a new starting point to the larger and more substantial diet which makes its ingestion obvious.

The following is a list of sick horse diet:—

Barley meal.	Corn flour.	Pea meal.
Bean ,,	Eggs, fresh laid.	Pearl barley.
Beef.	Green herbage.	Potatoes.
Beer.	Hay, best.	Porter.
Bran.	Lemon juice, fresh.	Rice.
Brandy.	Lentils.	Rock salt.
Bread.	Linseed.	Salt, table.
Biscuits.	Malt.	Skimmed milk.
Carrots.	New milk.	Whey.
Celery seed.	Oats.	Wine.

The above small number of articles used in the preparation of sick horse diet can be added to at pleasure by any kindly-disposed nurse, if he or she think proper. We will now give directions for a few useful combinations of the above.

Barley Meal.

Barley contains about 12 per cent. of flesh-forming material, but the meal is rather insipid taken alone. It is highly useful as a laxative diet. The following is a rough imitation of "Revalenta Arabica Food," so prominently advertised:—

Barley and Lentil Gruel.—Take of barley meal six parts, lentil flour two parts, celery seed half a part; mix. A few handfuls boiled in a gallon of water, down to six pints, makes a capital nutritious drink, used as a change in place of oatmeal gruel.

Bean Meal.

Beans contain no less than 30 per cent. of flesh-forming material, and cannot be given largely, even in health. Bean meal, however, is valuable as a relish in bran-mashes, removing the objection to their insipidity.

Bean Meal and Bran-mash.—Mix a small bran-mash as directed on p. 158, then add two handfuls of bean meal, and stir it well in with a clean piece of wood.

Bean Meal and Bread-mash.—Soak a loaf of bread (cut in large slices) for two hours in new milk, then make a mash with two handfuls of bean meal and a pinch or two of salt.

Bean Meal and Potato-mash.—Boil some potatoes in their skins, then peel them and pound them into a small mash, and mix with one or two handfuls of bean meal. Such a mash must not exceed two pounds in weight, and will be better to be smaller, and repeated night and morning, or oftener.

Bean Meal and Pearl Barley.—A small mash may be made by mixing a little bean meal with the barley that has been cooked in making barley water.

Bean Meal and Rice.—Take a few handfuls of rice and add water to it, so as just to cover it, and boil. When the rice is quite expanded take it off the fire, and stir in two handfuls of bean meal.

Beef.

Raw Meat Juice.—Cut good lean beef, without skin and fat, into small pieces. Place this in a basin, and add to it the same bulk of water as of beef. Let the whole stand a few hours, then squeeze the beef, little by little, and strain through muslin. A pinch of table salt may be added. *Useful as a stimulating nutrient, given if needful as a draught from the drench bottle, in the lowest states of weakness and exhaustion. It may be repeated three times a day.*

Beef Tea.—Take good lean beef, cut it into pieces the size

of a walnut, pick off all skin and fat, place it in a stone jar, and just cover it with water; place on a cover, and let this stand in a slow oven for five hours. *Give a large breakfast cupful every four hours, in urgent weakness, if necessary, out of a drench horn.*

Liebig's Extract of Beef.—Take some of this and mix it as directed, or put a teaspoonful to every pint of water, adding a very little salt. *Useful as a brisk stimulant in urgent weakness.*

Beer.

This, if good malt and hop ale, is excellent, and highly relished by the horse, if presented as follows:—

Beer and Loaf Bread.—Place a quart of ale in the bottom of a pail, then place a whole loaf, with the crust pared off, in the ale, leaving the upper side dry. The horse eats the bread down to the beer, and eventually takes the whole, beer also; and will henceforth take kindly to the beer given alone.

Mayhew wisely remarks that, if the tired and thirsty huntingman would call for a loaf and quart of ale or stout at the time he calls for his own "peg," after "leaving off" far from home, the horse would get a refresher, and go gaily home on fresh legs; and no time would be sacrificed, as in the case of a feed of corn—the other alternative.

Beer and loaf is capital in long, tedious cases of extreme weakness, such as the continued fevers—influenza, for example—dropsies, &c.

Of course porter or stout may be used instead of ale, or alternately with ale.

Bran.

Bran-mash.—Place good, recently-made bran in a pail; pour boiling water over it; let this stand near a fire, covered with several thicknesses of clean rug; mix thoroughly with a stick. Highly useful, but much abused. It should be given

only in quantities capable of being eaten then and there, as its tendency to become sour with standing is very great. It ought to be placed in a stone manger, or given in the pail in which it is made, and never placed in a wooden manger. *Highly useful when a cathartic is given, on account of its laxative properties.*

Bran Tea.—Place a few handfuls of good, fresh bran in the bottom of a pail; fill up the pail with boiling water; let the whole stand covered near a fire; then strain through muslin. Place, when cold, in a fresh, cold, clean pail, and squeeze a lemon into it, and give. *A pleasant, demulcent drink after inflamed bowels, diseases of the urinary organs, in fevers, etc.*

Brandy.

The best brandy only is to be thought of.

Brandy and Egg Mixture.—Beat well up four fresh eggs, then add a quart of good, new milk, and two wineglassfuls of brandy. Give such a dose in a clean pail, or out of a drench bottle, three or four times, or oftener, in the twenty-four hours. *Highly useful in the lowest depths of weakness, where no food, or very little, can be taken.*

Bread.

Bread-mash.—Place two loaves in milk for two hours; reduce to a pulp; add a little salt, and (if thought desirable) a little celery seed also.

Compound Bread-mash.—Take four tablespoonfuls, upheaped, of bread-mash; the same quantity of malt; mix well together; then pierce it all over, after placing it before the horse, with pieces of sliced carrot.

Bread and Milk.—Slice up one or two loaves, and place them in good new milk and give.

Pulled Bread.—Remove the crust from one or two new loaves, and pull the crum or white portion with the fingers

into pieces the size of walnuts, or larger; place these in a hot oven, to brown the surface of each piece—turning the pieces over for this purpose—and afterwards put into a cooler oven for three or four hours, to drive away all moisture. *This is highly relished by the sick horse, and may be given at intervals from the hand in very low, weak cases.*

Biscuits.

The author feels it quite unnecessary to say more, under this division, than that all forms of biscuits, variously flavoured or plain, are very appetising to the sick horse. They may be given one at a time by hand, or stuck in and around bread, malt, and other mashes, as the giver may think proper.

Carrots.

These are highly relished by horses in sickness and in health. They should be washed and scraped very clean, and sliced crosswise or lengthwise. They are better given uncooked, either from the hand or placed temptingly in and around mashes, or in corn, &c.

Celery Seed.

This seed possesses appetising properties in both taste and smell. It is therefore a valuable flavouring agent.

Celery Seed Tea.—Pour a quart of boiling water upon two tablespoonfuls of seed; let it stand half an hour; then place it in half a pail of water, and give cold.

Corn Flour.

The harsh and peculiar flavour of maize is toned down by treatment with caustic soda, and the product is afterwards termed *oswego flour, maizena, or corn flour.* Maize may be given to the horse in health, under certain restrictions; but the above preparation from maize is preferable in sickness.

Corn Flour-mash.—Take four tablespoonfuls of corn flour, and mix it with a quart of milk. Boil slowly for eight minutes or longer; then pour into a clean pail, and stir in two handfuls of malt. Let it get cold, and give it in the pail.

Green Herbage.

Freshly-cut grass, clover, tares or vetches, lucerne, rye-grass, and sainfoin are of the highest value in many forms of sickness. They must be freshly cut; must not be in a ripening stage; and must not, above all things, be given indiscriminately—that is, in every ailment—or harm may result. It is best to give them in small quantities, in order that their easy ingestion may not lead to over-eating. In low states of illness, with utter absence of appetite, a little green food may be offered by hand from time to time.

Hay.

Good, old, upland hay has a delicious and grateful smell, even to ourselves, and is highly relished—perhaps more than any food whatever—by the horse in health. It should be given in *small* quantities in sickness, and placed within easy reach; and when once thoroughly breathed upon, or smeared with secretions from the nose or mouth, should be removed. A handful, given by hand now and then, will often be taken when refused otherwise.

Cut Hay-mash.—Take seven or eight handfuls of bran-mash, and two handfuls of bean meal; then add the same quantity, or more, of the chaff of old, upland hay. Mix all together, and sprinkle over all a handful of malt.

Hay Tea.—Place old, upland hay in a pail, so as to half fill the pail on pressure being applied; then pour over boiling water till the pail is three-quarters full. Let it stand near a fire—covered over with a few thicknesses of a clean rug—for an hour; then pour off the water into a cold, clean pail, and give. In fevers, a little ice may be added.

Lemons.

The juice of good fresh lemons is highly useful for its appetising virtues, also for the grateful acidity it imparts to various drinks in feverish states. It may be added to plain water, bran tea, hay tea, etc., etc., if it be clearly seen that the addition is appreciated, not otherwise. *The shy, inquisitive sniff provoked by the presentation of an unusual aliment, must neither in the case of lemons nor any other desirable form of nourishment, be taken for positive objection.*

Lentils.

These present a form of aliment of great antiquity, and still in great favour in the East. Like beans, they contain large amounts of flesh formers (25 per cent.).

Red or Arabian lentil flour, mixed with barley meal, forms the bulk of the celebrated "Revalenta Arabica," so largely advertised.

Lentil flour, mixed with barley meal, half and half, may be advantageously sprinkled over bran-mashes, and other forms of food and mashes, to give extra piquancy. A handful or two may be stirred occasionally into the drinking water.

Linseed.

Whole linseed, good as can be bought, should be in the possession of every horse-owner, as it forms a bland, mucilaginous, laxative diet, so very largely needed in the sick box.

Linseed-mash.—Boil a pound of good, whole linseed in a gallon of water down to six pints, then pour this over good bran instead of the boiling water used in making a bran-mash. A handful of malt may be thrown over the surface after the mash is placed for the horse to eat. *A highly useful, bland, laxative diet during "physic."*

Linseed Tea.—A pound of whole linseed, boiled in two gallons of water down to ten or twelve pints must be strained

through muslin: let it get cold, then add fresh lemon juice, or ice, or both. *A highly useful fever drink, also of great use during and after inflammation of the bowels, kidneys, or any of the urinary organs. Especially useful in catarrh and sore throat.*

Linseed Cake.—When good, this is a great acquisition in the sick box. It may be given by hand in small pieces.

Malt.

The process to which barley is exposed in its conversion into malt renders it different from barley, in a portion of the starch being represented by sugar. The *diastase* developed in the process is highly useful to the weakened stomach incapable of starch conversion. The ease, therefore, with which malt can be digested, together with its power of helping in the process of digestion, renders malt an invaluable agent in the treatment of sick horses and cattle. A handful or two may be sprinkled over different varieties of diet, after placing these before the sick animal.

New or Fresh Milk.

After, or during illnesses where the horse is losing the fats of his body, rapidly "losing flesh," good sweet milk, given in quart doses from a clean pail, is highly valuable. It is often a good plan to give frequent small quantities with ice, in place of plain water.

Oats.

Good, short, well-fed oats are valuable in sickness as well as in health. In the later periods of convalescence they may be used whole.

Oat Compound.—Take a handful each of oats, bran, rice, or pearl barley, malt, hay chaff, whole linseed, bean meal, and celery seed, or any like combination, and mix thoroughly together. A few slices of carrot may be added.

Oat Cake.—The ordinary oat cake is highly relished, when given a little at a time by hand, in the lowest states of weakness and complete loss of appetite.

Pea Meal.

This may be used in place of bean meal, as above described, or alternately with bean meal. It has 23 per cent. of flesh-forming elements.

Pearl Barley.

This, like linseed, bran, etc., is highly useful in the sick box for making a bland, mucilaginous drink.

Barley Water.—Take about a pound of pearl barley, and boil it in two gallons of water for half-an-hour; strain through a cloth, let it get cold, then give either alone, or with ice, or fresh lemon juice, or both combined. *It has the same uses as linseed tea.*

Potatoes.

These are highly useful as food for the horse in health, and may be given by way of varying the food during sickness. They contain very large quantities of starch, and are therefore unfit for exhibition in liver disorders, or in disorders in which the liver is implicated.

Potato-mash.—Boil potatoes with their skins on, as in domestic cookery; skin them, and beat them up into a mash with milk, whey, or skimmed milk. Mix malt with this mash and give. *Useful in later periods of convalescence.*

Porter.

Good, unadulterated porter is highly useful, and used in the same way as beer, for which it may be wholly or in part substituted.

Rice.

Rice, boiled in a little water till quite expanded, may be given alone as a mash, or may be mixed with malt, bread,

carrots, bran, etc., to form most savoury food, to tempt the remains of appetite.

Rice Water.—Thoroughly wash half-a-pound of rice with cold water; macerate it for three hours in two gallons or less of water, at a tepid heat, and afterwards boil slowly for an hour, and strain through muslin. *A useful drink in dysentery, diarrhœa, and irritable states of the alimentary canal.* It may be flavoured with lemon juice or celery seed.

Rock Salt.

A piece of rock salt, weighing two or three pounds, is a grateful addition to a horse's food in health. According to Walsh, horses lick and consume about a pound per month in health. In sickness there is no reason why this little luxury should be withheld.

Table Salt.

This may be used as a flavouring ingredient and will be found of great value, especially by those sick horses which in health enjoy a lick at a lump of rock salt placed permanently in the manger. Table salt, however, to those unaccustomed to rock salt, must be used a little more sparingly.

Skimmed Milk.

This may be used freely as a drink in place of water throughout most illnesses, and is of especial value in Bright's diseases of the kidneys, and all urinary disorders attended by want of a due amount of secretion from the kidneys—*i.e.*, where the urine is scanty and high in colour. *A highly useful diuretic in itself, and a considerable help to diuretic medicines.*

Whey.

Take fresh warm or warmed milk, and curdle it with runnet, and then strain off the opalescent liquor. Very highly useful as a drink in fevers, acting as a diaphoretic and diuretic, thus keeping two out of the four chief emunctories active.

Wine.

Good, sound port wine, a bottle per diem, given at frequent intervals, is highly useful in sinking conditions in tiding the system over a critical period. It may be given alternately with brandy. Other nourishment must be given in fair quantities when wine is given as an article of diet.

ARRANGEMENT OF SICK BOX.

In all cases the sick horse should be removed from those which are healthy, and if possible occupy a space to himself, and this space should not communicate in any way, not even in community of atmosphere, with the space occupied by the healthy horses. For this reason an isolated loose box of proper dimensions is always advisable. When such a thing is not to hand one may be extemporised in any suitable out-building. The small boxes in stables, though good enough when we merely wish the horse to be able to turn himself about and be free from the restraint of the halter, are not to be used as sick boxes in fevers or inflammations of internal organs, if we can avoid it, because there is community of atmosphere; and then, again, these boxes are usually too small.

Ventilation.—The *principle* of ventilation consists in warm air rising and cold air occupying a lower stratum of space, where warm and cold air mix. The *practice* of ventilation, therefore, consists in making a grating, with not too fine a mesh, *as high up* near the ceiling, or in the ceiling, as possible, for the warm air (which is the impure air of a loose box, heated only by the body of the horse) to escape through; the cold fresh air being admitted as low down as possible in the wall of the box. This latter indication is usually carried out by means of a wooden spout, having its out-door mouth close to the ground, and its in-door mouth carried about two feet or

so upwards. This arrangement acts well, because it collects the coldest air, and directs the current of this air *upwards* and not directly *towards* the horse; thus it prevents a draught. If a box be not ventilated thus in practice, the principle of ventilation may be carried out in any way to suit the particular case.

A thermometer should always be suspended in every sick box, away from all draughts, and the doors and other outlets so arranged as to keep a temperature of from 60° to 66° Fah. This is a good general temperature, but in bronchitis, and some other chest affections, a higher temperature is desirable—a temperature that will assist the application of steam from a bronchitis kettle in allaying irritability of the painful air-passages.

Clothing.—In illnesses where food is not consumed, especially in the cold months of winter, the warmth of the body is to be maintained by warm woollen rugs and bandages. At other times the body is to be clothed rather more than is necessary in good health. Of course, where it is lameness and not inward disease, the horse requires the clothing he would have in health. A common and a very serious mistake is to overclothe. This is done in two ways; by putting on too much woollen material, or by loading the poor brute with material possessing little heat-retaining properties, such as sacks, and various "odds and ends." Where good woollen rugs are not forthcoming, a good, thick, new bed blanket should be used.

The commonest mistakes in ventilation and clothing are to load the horse with sacks, rugs, coats, etc., till he can hardly move, and to block up every air-hole with wisps of straw except the keyhole, the latter being plugged with hay.

Ground Covering.—The ground covering must be kept sweet and clean by being frequently changed, in whole or in part. It matters little what the covering consists of, provided it be dry. Oat and barley straw are better than wheat straw,

especially if the latter be old. Special coverings, such as tan, are used when an astringent action has to be applied to the feet, as in running thrush. Sawdust is warm, and may be too heating, but good dry sawdust is by no means a bad covering in certain cases, or for short periods.

Light.—A sick box is the better for having a good share of sunlight, as light plays a most important part in the well-being of animals and plants. Where the eyes are affected, or where the brain and general nervous system are affected, the sick box must be darkened somewhat, so as to avoid glare.

Quietude.—It is quite impossible to over-rate the importance ef excluding all noise in all cases of illness, more especially where there is much prostration, or disease of the brain and nervous system. The rattle of carriages, carts, loud laughter, loud talk even, must be prohibited, or avoided by all means. Fussiness on the part of the nurse is to be condemned, even quick movement on his part is objectionable. The nurse cannot go about his work too quietly, and be too careful with pail handles and utensils, which rattle if carelessly handled. His voice, even, must be modulated to soft, soothing tones.

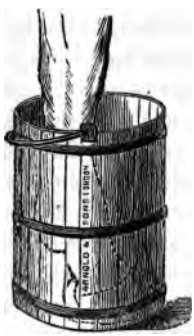
Grooming or Cleaning.—It is a common practice to regard a sick horse as mortally injured by cleanliness, or rather by the means adopted to secure cleanliness. So far from this being the case sick horses require as much grooming as healthy ones; indeed, whilst a healthy horse may remain healthy in spite of a dirty, filthy skin, a sick horse may be much the worse of it. The grooming of the sick and the healthy is necessarily different; for example, to strip all clothing off a sick horse, and pound away at his sides or abdomen with a wisp, when he is suffering from a smart pleurisy or peritonitis, would be cruel, and might be fatal; not so to lift a little of his clothing at a time, and clean the skin quietly with a brush and soft cloth. Nurses of human patients wash, and afterwards rub dry, every inch of the body of their

patients daily, under cover of the whole bed-clothing, and there is no reason why good grooms should not accomplish the same with their patients. The face, and especially the nostrils of the horse, should be sponged with water, or vinegar and water, or eau de Cologne and water, at least three times a day; the tail should be lifted and the root of the dock, etc., treated likewise. Any discharge from the nose is to be cleaned thoroughly away with a moistened sponge as soon as it appears; so that in influenza and bad cases of catarrh the sponging is a very frequent necessity.

Steam in Nursing.—It frequently happens that instead of having a warm, dry atmosphere about a horse, warm, moist atmosphere is needful, as in diseases of an inflammatory nature in any extensive portion of the air passages, especially those within the chest. For this purpose, the bronchitis kettle is invaluable; indeed, every horse-owner should possess one, which will do for his household use, as one and the same instrument answers for stable and sick-chamber. It must be attended to all the time it is in use, and the steam directed towards the head of the horse, which may, just at first, startle the patient, when he requires to be reassured—an easy enough matter. Another excellent way of applying steam to the air passages is by means of hay, boiling water, and a nose bag. A rough and ready nose bag is to be tacked together, made of a piece of clean sacking; then pour quite boiling water out of a kettle on hay in the bottom of a pail, and in a minute or two quickly place the hot hay into the bottom of the nose bag, and a small handful of dry hay upon this again; then quickly put on the nose bag. A succession of such applications must be kept up for hours together, by having two bags and changing them every hour, or oftener. This, however, is not so good as the bronchitis kettle.

Fomentations.—These are of the first importance in many illnesses, and require much care if they are to do good; indeed,

it is hardly too much to say that when fomentations are not properly applied, they do harm in most cases. To foment large areas, such as the whole abdomen, or the entire chest, a copious supply of water and lifting power are required. A large copper is to keep the water boiling; a large tub is to be placed in the corner of the box to hold the water, and rugs thrown over this when the flannels are not being actually changed. Several men are also required to wring the rugs and hold them to the parts. As the large and small hot fomentations are alike in every particular except size, we will describe the small fomentation as a type of what fomentation should be. We take a bowl, like a wash-hand basin, and spread a hand-towel over it; then we take a piece of flannel in four thicknesses, a little larger than the area we are going to foment, and place it on the towel, in the centre of the bowl; we then pour perfectly boiling water over the flannel out of a kettle, quickly fold the towel over it, and screw the towel ends reverse ways, so as to screw or press out every *drop* of boiling water; then quickly place it to the affected part, and a dry towel and mackintosh over all. Such a flannel is red-hot, so to speak; but instead of scalding will be most grateful to the feelings of the patient, and will not scald if all the water be pressed out. The flannel must be changed every hour, or oftener. To foment a large area thus, it will be seen that the difficulty is in wringing out the water from such large cloths as are required. A small wringer, as used in the laundry, screwed on the edge of the tub is a good thing.



LEG-TUB FOR FOMENTING.

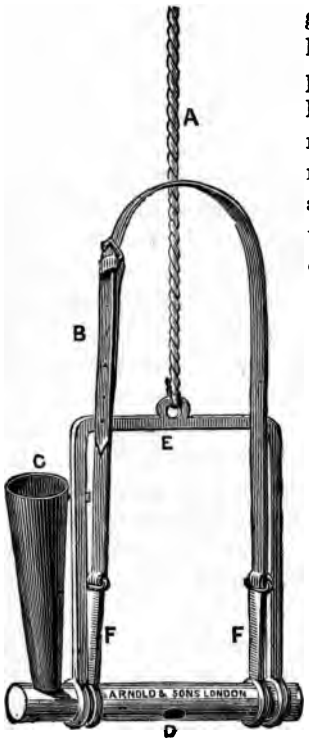
Leg fomenting is best effected by means of an ordinary leg-tub, the water in the tub being syphoned out, or taken out with a large syringe, and fresh water of the

proper degree of heat placed in the tub. Putting hot water to that already cooled in the tub is bad practice.

Fomentation cloths may be tied on, if small; if large, they must be held to the part by manual labour. For fomenting the upper part of the throat, an eight-tailed bandage is required to tie on the fomentation, as in the case of a poultice to this part.

Poulticing.—Fomentations and poultices are the same in principle: both aim at applying heat and moisture to a part. Some parts—the foot, for example, when constant attention to a leg-tub is not convenient—are more easily poulticed, so that convenience must largely determine whether we poultice or foment. Linseed meal and bran mixed, hold heat and moisture well; fresh cow's dung is a great favourite with some; bread crumb, so largely used in human practice, is also good. The neatest substance of all is sponge mounted on india-rubber, called "spongio-piline." When the skin is broken, and the surface giving off offensive gases, a disinfecting poultice is used. For this purpose we put charcoal, or fresh brewers' yeast to the poultice, whatever it is, or charcoal and yeast combined. In "grease," cracked heels, thrush, etc., disinfecting poultices are highly useful, and, along with low diet and cathartics, clean the surfaces and prepare them for our applications, which aim at arresting all discharges. With a neat, well-made poultice—best of all, with spongio-piline—we can also apply liniments to subdue pain, liniments or other preparations to keep up counter-irritation, etc. These effective applications should always be borne in mind. In bad sprains, or in fresh inflammation, spongio-piline with hot water poured over it, and a grain or two of morphia salt dissolved in two drams of spirit of wine, will numb the pain, besides (in a most effective manner) helping to control the inflammation. There are some scores of applications that can be applied conjointly with poultices, which the practitioner or amateur must not lose sight of; by choice, of course, he will prefer liniments with spongio-piline.

Medicine Administering.—Even when the services of the expert are being enjoyed, the nurse has to administer medicines between visits and at odd times. Drenches are easily given out of a wine bottle, but are better given from a good drench horn, like Arnold's, for instance. Two persons are required in giving a large draught—one to hold the mouth in the air by means of a neck-strap slinging the upper jaw, and held up by a long-shafted, two-pronged fork, or, what is more efficient, Arnold's stirrup-shaped



A NEW DRENCHING-HORN AND HEAD-COLLAR COMBINED.

ARNOLD'S DRENCH-HORN.

drenching gag and pulley. The one who gives the drench stands on the bottom of an inverted pail, on the off (right) side of the horse's head. Boluses or "balls," are given by one man, and are therefore more useful in that they require

the dexterity of one man only; a horse gets every particle of the medicine we wish to give him, and none is wasted. On the other hand, where we wish a medicine to act quickly, it is better to give a drench than a bolus. Where the required dexterity is not forthcoming, a balling gun, as in woodcut, is by far the best; it is better to use a balling gun than to frighten and distress a sick horse, and perhaps tear his tongue, and fail to give the bolus in the end. Many medicines can be given with the food; many powders and some liquids are readily taken on

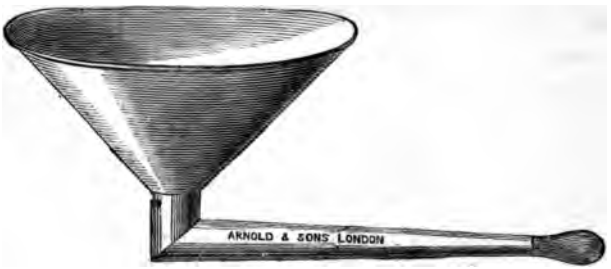
ARNOLD'S BALLING GUN.

mashes, or dissolved in the drinking water. For a certainty, there is no way so good as a bolus or a drench, though the rubbing of small powders on the tongue, held out as in bolus giving, and the squirting of very small liquid doses into the mouth with a small syringe, are modes of medicine giving too much lost sight of.

Enema or Clyster Administering.—Enemas, or clysters—sometimes called injections—are very largely used in cases of sickness among animals, as in mankind, and are of very special value.

They are used for several purposes:—1. To act as laxatives, and clear out the posterior bowels. 2. To foment the organs contained by the pelvis, such as the womb, bladder, &c. 3. To apply medicines topically to these organs. 4. To apply medicines to affect the whole system. 5. To administer nourishment, &c.

1. *As laxatives.*—This is the most common use of enemas. Large quantities (gallons) of plain, warm water, or soap and water, are required. We first throw up a gallon, which is ejected, and brings fæcal matter with it; in other words, we clear the end gut (rectum) by our first lot of fluid; then we fill the large bowels with gallons of fluid. To effect this, we have to inject the fluid *very slowly indeed*, or we cause griping and expulsion of the fluid before we have given a quarter of the quantity we wish to give. To give four or five gallons of fluid we require to inject so slowly that half an hour is



ENEMA FUNNEL.

occupied in the process. Such an enema is an effectual laxative, and will not need repetition during the same illness, unless it be a long illness. If we wish to stimulate the bowels more than warm water or soap and water will do, we dissolve an ordinary aloetic cathartic bolus in the water we inject.

2. *To foment the pelvic organs.*—We require to administer smaller quantities, such as a gallon of barley water, or linseed tea, having some soothing agents dissolved in it. Our enemas must be repeated several times a day to be of real service.

3. *To apply medicines topically to the pelvic organs by means of enemas.*—We must use such small quantities of fluid as will not be ejected. For these purposes a pint at most must be used.

4. *To apply medicines to affect the whole system.*—Not more than a pint must be used at any one time; but where we wish to medicate the surface of the bowels, as in diarrhœa and dysentery, we must slowly inject one or two gallons of our remedy.

5. *To administer nourishment.*—Enemas are of the highest value where food is altogether or largely refused, or cannot be taken *viâ* the mouth. The lining of the rectum, or end gut, can be made to absorb liquids which find their way to the blood, and acts in place of the stomach to some extent. When life depends upon some slight amount of nourishment being taken, we must never lose sight of this means of giving food. Very small quantities must be given several times a day; and the smallness of the quantity to be given, under the most favourable circumstances, this way, renders it imperative that our applications be in the most concentrated form. A good concentrated food may be made thus:—Take a teaspoonful of Liebig's Extract of Beef, one egg, one tablespoonful of lime-water, eight tablespoonfuls of good milk, and a tablespoonful of brandy; beat up the egg in a little milk, and dissolve the extract also; then mix all the ingredients together, and give. This will measure about six fluid ounces, and will be easily retained. Give such a dose every two hours.

Note.—Always clear out the end gut (rectum) with a copious, plain enema before giving any form of injection.

OPERATIONS.

THE great strength, and the fear induced by either the pain or the unusual circumstances of operations, render it imperative that the horse be thoroughly secured during operations, both for the sake of the operator and his assistants, and for the safety of the horse himself.

It is a golden rule that ought never to be broken: to have the horse to be operated upon thoroughly secured before commencing to operate. Of course the securing preliminaries vary with the nature of the operation; thus, whilst nothing short of casting will do for some operations, the greater number of operations require less severe measures; but always to have the horse over rather than under-secured, is an excellent rule.

Blinders.—For operation purposes these should be made in the form of a leather hood, to fit over the head—the ears threading through holes for the purpose, and the eyes fitting into cupped leather depressions—the whole hood buckling beneath the chin.

In cases where this leather hood is not at hand, a good substitute will be found in a thick hand-towel or very large duster; these require to be fastened to the head-strap of a bridle or halter.

Nothing we can do subdues a horse more than temporarily depriving him of his eyesight.

Twitching.—Strong whitleather, made into a loop in a hole at the end of a stout, short piece of wood, makes a good twitch. The principle of the twitch is to divert the attention

to the muzzle by causing a cramped pain by ligaturing the upper lip.

A combination of twitching and blinding is excellent in short operations, where casting is not essential.

Holding up a Fore Foot.—One of the fore feet is often held up—usually the one belonging to the side of the horse operated upon—with great benefit. This renders the horse's standing powers precarious, and he has to be careful how he moves any one of his three remaining feet.

Care should be taken to lift the foot only, without attempting to bear any of the horse's weight.

A combination of twitching, blinding, and holding-up a foot is a common and highly advantageous practice.

Side-line.—This is an elaborate precaution midway between the measures above described and actual casting.

A cart-rope is required as a side-line. Take a long, stout cart-rope, fold it equally once, then tie a knot so as to form a loop the size of a collar to sit comfortably on the shoulders; now place the loop on like a collar, and take the knot and ends of the rope between the fore legs; next carry one or both ends of the rope between the hind legs, and, having arranged them whilst standing behind the horse, bring forward each end, or only one end of the rope, and thread it tightly through the collar loop. The rope, or ropes, may be allowed to drop, so as to encircle the pasterns; then draw the rope tight, by standing at the shoulder just slightly behind the collar loop.

A combination of all the foregoing methods may be used, but is seldom requisite; a blind, however, is always useful, and a twitch, where we are to inflict pain in operating.

Where plenty of force is at hand, it is not difficult to bring a horse down and secure him with a *side-line*, as in castrating.

Casting with Hobbles.—We purposely pass over this method, because so few amateurs keep a set of hobbles.

Chloroforming.—It is absolutely necessary to have the horse lying and thoroughly secured before administering chloroform, on account of the preliminary stage of excitement which it induces rendering the horse's movements uncontrolable. When lying, have abundance of straw about the head, that movements during semi-insensibility may not bruise the head. The chloroform should be given from a drop-bottle, or from a bottle the cork of which has been cut so as to admit of only a succession of drops escaping. A piece of coarse, thin sacking, about the size of a hat-crown, is then to be folded and placed over, and lightly pressed upon, the uppermost nostril, and the chloroform dropped over it so as to always keep the sacking moist. The under nostril is left free, that this, together with the copious inhalations of air drawn through the chloroform cloth, may sufficiently dilute the chloroform vapour. The bottle should hold six ounces, although two ounces will keep the horse quite narcotised for half or three-quarters of an hour. The advent of utter insensibility is preceded by struggling, and may be known by the fixed stare of the eye, and insensibility of the eyeball when touched.

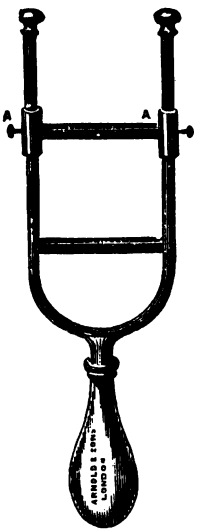
Caution.—During the drunken state succeeding the chloroform inhalation, the horse had better be kept secured, say for twenty minutes after ceasing the chloroforming, or perhaps longer; then knee-caps must be put on, plenty of straw spread about, and the horse supported on first rising and attempting to walk. The author has given chloroform in the above manner numerous times, without the shadow of an accident of any description.

It saves the chloroform vapour from being blown into the air and wasted, to open and shut the valve (formed by the cloth over the nostril) at inspiration and expiration—shutting during inspiration, and removing the cloth by a turn of the wrist during expiration.

Operations on the Mouth.

Veterinarians are really to be envied for the thorough manner in which they can fix the mouth open for operation. This arises from the space (a large suitable depression) between the horse's molars and his incisors, wherein the gag has no difficulty in resting securely.

Gagging.—For most operations on the horse's mouth a gag is essential. The author here emphatically asserts that gagging consists in separating the upper and lower jaw to their utmost, and keeping them in this position. Many operations are badly done, and the operator injured, by neglect of this precaution. In rasping the teeth, for instance, the preliminary feeling of the edges with the fingers is made more difficult by the movement of the jaws and root of the tongue, so freely allowed by too small a gag. The author used Professor Varnell's gag for some time, but found it so insecure, from the hold upon it being at the side instead of below, also from one cheek-piece being wanting, that he begs to introduce the gag as here represented as an improvement. It is the old-fashioned gag, with a moveable upper bar. No one who has used the old-fashioned gag, and Professor Varnell's, can have failed to remark the steadiness of the former in comparison with the latter. Unfortunately, the old gag, with its immoveable bars, is too large for small ponies, and far too small for draught-horses with large bony heads, and only fit for medium sized horses—the greater majority, of course.



The Author's Gag.

For most operations on the mouth, gagging and twitching combined form sufficient restriction.

Balling.—There is nothing to excel the old method of giving a bolus or ball with the hand, in the usual way, but when we have a glandered horse to treat, or a suspicion of glanders, a balling gun should be used. The best one for this purpose is Arnold's patent, as shown on page 173. It can be used with one hand, whilst the other hand holds the tongue, as in balling with the hand. Care should be taken in balling to slide the hand, or, if a gun be used, the cup of the gun, *along the roof of the mouth;* also to land the bolus well upon the root of the tongue.

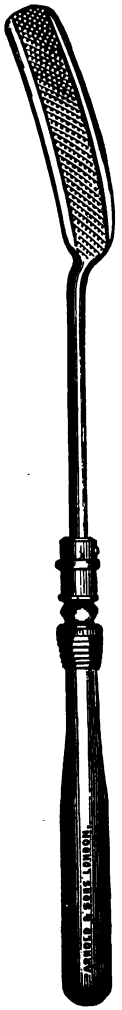
Chiselling off Molars.—When a molar is standing up above its fellows, it interferes with each, causing quidding, etc., and requires chiselling off with a chisel, as in the diagram.

After thoroughly gagging, twitching, and blinding, we feel the position of the tooth to be attacked; then the chisel is advanced along the molars, which are made to slide through it as along a groove, and when quite touching the molar, by a very smart blow with a mallet or a hammer—the author prefers a mallet—the molar is chipped off on a level with its fellow teeth.

Gum Lancing.—During second dentition, especially about the third year, the teeth, especially the incisors, are "cut" with difficulty, and are the better for being freely lanced. The indications for tooth lancing are, swelling and redness of the gum over the tooth that is pushing its way through, and inability to eat on the part of the horse. We here give a drawing of a gum lancet.

Having twitched the horse, the lancet is freely scored over the gum in all directions, taking care not to scrape the tooth.

Incisors, Extracting.—During second dentition—as explained under article DENTITION—the incisors require extracting now and then. After twitching the horse, we grasp the tooth well below the surface of the gum, by pushing the points of the forceps well beneath the surface; and then extract by gentle,



TOOTH RASP.

GUM LANCET.

TOOTH FORCEPS.

PROBANG.

MOLAR TOOTH CHISEL.

continued traction, taking care not to squeeze the tooth too much, or we fracture it, as we might expect, with such powerful nippers.

Molars, Rasping.—The edges of the molars sometimes become as sharp as knives, cutting and wounding the cheeks and tongue, and causing soreness in eating.

After gagging, twitching, and blinding, and ascertaining the exact state of the molars by running our fingers along each of the four rows of molars, we rasp their sharp edges thoroughly, completing one row at a time, and making sure of our work by carefully feeling all along it.

Probang Inserting.—Various circumstances call for the introduction of the probang down a horse's gullet (œsophagus.)

After gagging, twitching, and drawing the tongue *slightly* forward, as in balling, we carefully insert the probang, which must be thickly coated with lard (oiling will not be sufficient).

The head forms an angle with the gullet at the back of the mouth; so that after pushing the probang to the far end of the mouth, we press it along in a tentative manner until it is fairly in the gullet. Then we pay it out till it reaches the stomach.

Operations on the Foot.

When horsemen speak of the horse's foot and foot lameness, the fore feet are really the only ones thought of, as a general thing, because ninety-nine times lameness occurs in the fore-feet to once in the hind feet. This arises from the fore extremities being the weight carriers, whilst the hind extremities are only the propellers—the former therefore receiving most of the jarring and concussion.

Foot Examining.—No operation connected with the horse is half so important as foot examining, for several reasons. To be able to examine a foot thoroughly—we usually mean, of course, a fore foot—needs much practice and tact. No restraint

is required. We remove the shoe, and pare the sole *all* over evenly with a drawing knife, especially paring well down in the corners occupied by corns, also the part about the point of the frog. In paring, be sure you are paring away a little of the sound horn, but do not weaken the arch formed by the sole by taking away too thick parings. Next, with a small drawing knife, called a searcher, thin the sole at each nail-hole until you come upon sound tissue; then with pincers make steady pressure all round the periphery of the sole, especially over the nail-tracks, by placing one beak of the pincers on the sole, a little to the inner side of the lower opening of the nail-track, and the other beak upon the *wall* of the foot. This squeezes the horn upon the nail-track, and causes pain and shrinking should the nail-track be inflamed, and the seat of the cause of the lameness. Bruise of the sole causes lameness; the bruise is attended by discoloration of the horn, which becomes more and more discoloured as we pare deeper. Of course we must be careful not to mistake any natural marbling of the horn for the discoloration from a bruise. A small, painful corn is frequently overlooked by not—with a searcher—paring deep enough over the seat of the corn.

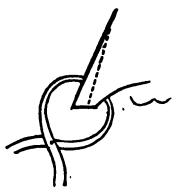


DIAGRAM SHOWING THE PRESSURE UPON A NAIL-TRACK.

Caution.—A powerful blacksmith can easily crush the sensitive parts included between the beaks of the pincers in testing the nail-tracks, and thus a false response may be given.

Frog Seton.—After paring the cleft of the frog thoroughly, and then blinding and twitching the horse, the foot is to be held up by an assistant who is not afraid of the horse's movements. It is a good plan to spread a little straw, and put on a knee-cap on the knee of the other leg, so that no harm may happen should the horse in his struggles fall on that

knee. A short, curved frog-seton needle, armed with a doubled length of tape, is now to be firmly plunged into the hollow of the heel, and brought out in the cleft of the frog; the tape cut, and its ends tied in a knot, so as to form a close loop. This allows the tape to be see-sawed up and down the wound, and the digestive saturating the tape to be freely applied to the seton-track, whilst, on the other hand, the loop sits close, and is in no danger of being torn out by anything hooking into it. Cantharides ointment (F. xliii.) is as good a digestive to smear upon the tape as any other, and may be applied at the time of

FROG-SETON NEEDLE.

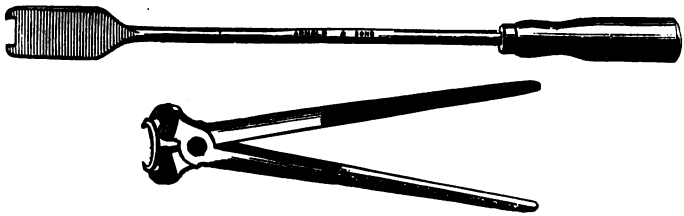
insertion, and afterwards once a day. Of course, all discharge requires cleaning away with soap and water at least once a day.

Sand-crack Closing.—Whilst *no* amateur could well fail to close a sand-crack with Professor Pritchard's instruments (depicted in annexed engraving), *few* should ever attempt to do so, and *none* should do so without the opinion of a veterinary surgeon, for the following reasons:—A sand-crack causing lameness is really an inflamed fissure, with a granulating surface at the bottom, and therefore giving off a discharge. In wounds everywhere our object in treatment is to allow free vent to discharges; therefore a pain-giving sand-crack securely closed diametrically opposes a well-founded first principle of surgery, and can only give rise to greater mischief to the foot than in the case of an open sand-crack, which allows free vent to all discharges.

Professor Pritchard's conception of the method of closing a

sand-crack, and his instruments for doing so, are worthy of all praise, but the operation must necessarily be more of a preventive than a curative procedure. When a hoof is splitting and threatening the formation of a sand-crack, no time should be lost in at once fortifying the hoof fibre with this ingenious procedure.

The operation is conducted thus :—Make the square-pronged instrument red-hot, and burn a hole on each side of the crack, by applying the instrument to it straight from the fire; then take a piece of bent wire (supplied with the instruments) and hold it in the pincers, and apply it in the holes made in the hoof.



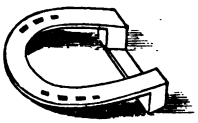
PROFESSOR PRITCHARD'S SAND-CRACK INSTRUMENTS.

It is best to burn as many sets of holes as we intend to make first, and apply the clips next; also, it is a good plan to apply every clip loosely till all are placed, then to tighten them up gradually, by going over them with the pincers several times.

It must be kept in mind that the wall of the hoof is thickest below, and gradually gets thinner towards the top, so that the holes burned in the upper half must be less deep than those lower down. By no means is any hole to injure the sensitive parts below.

Patten Shoe.—When, from sprain of the back sinews, in curbs, or any other cause, we wish to throw the weight off the back of a leg, we can easily do so by putting on a shoe with very high heels. A straight bar connecting the ground surface

of these high calkins, converts the whole into a kind of patten, hence the name. The patten is far better than the simple high heels unconnected, because the bearing surface is thus diffused, and the horse is unable to hurt himself by wrenching his foot, by throwing all his weight on one heel on uneven ground.



PATTEN SHOE.

Three-quarters Shoe.—These are very useful in the treatment of corns, etc., where all possibility of applying pressure to the part affected has to be avoided. A three-quarters shoe is so named, because of the iron forming three-quarters of a circle. It is made by cutting off the heel part on the side of the corn, and welding on a piece of iron to the other heel, and bringing it across the frog. We thus lose the support of the hind quarter of the hoof, and supply its place by frog pressure.

When a three-quarters shoe is put on, it is best to shoe with a leather sole.

Bar Shoes and Clips.—All farriers are so familiar with these that a description is unnecessary.

MISCELLANEOUS OPERATIONS.

Abscess Opening.—Abscesses are best opened with a Syme's abscess knife, as shown in wood-cut. This knife cuts outwards, and therefore causes less pain, because it divides the deeper nerve stems, and thus deprives the surface twigs of their sensibility. Very little restraint is required in opening an ordinary abscess in this way.

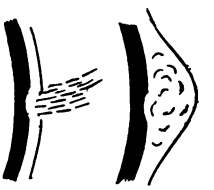
OPENING AN ABSCESS.

Bleeding from the Jugular Vein.—When blood has to be taken from the system in the horse, it is usual to choose the jugular vein to bleed from. It is then called *general blood-letting.*

The instruments usually preferred are the fleam and blood-

stick, on account of the certainty of tapping the vein to the proper extent, and thus making an opening with mechanical precision—neither too small nor too large. A less scientific substitute is the lancet, which in the eyes of some looks more "elegant" and "gentlemanly;" but the days of elegance at the expense of precision and certainty have gone by.

There are three important points to be observed in the operation. First, it is essential to bear in mind that the skin over the vein is very freely moveable, and readily forms a valve at any time between tapping the vein and the final pinning-up. Second, the use of a rusty instrument, or one that has the least particle of refuse left after former use, will set up inflammation. Third, when pinning-up, any dragging upon the skin will cause a thrombus: including the vein will cause inflammation: and tightening the figure of eight ligature over the pin too much will cause gangrene of the skin, inflammation, and suppuration, or a sloughing process.



BLEEDING FROM THE JUGULAR VEIN.

These Figures show the blood escaping properly; also a valve formed whereby the blood is pent up and a thrombus formed.

No securing is required, but a snaffle bridle is to be preferred. Having brought the horse's neck (near or left side) to a good light, we take a sponge freshly wrung out of water and smoothe the hair with it over the bleeding place. (This should be the bottom of the upper third of the neck.) Next we get an assistant to elevate the chin, and keep it elevated all the time. A tall assistant will rest the chin of a medium-sized horse on his shoulder, whilst a short assistant will find his head the best, with the hand or hands as a cushion. If the assistant cannot spare a hand to cover the eye next the bleeding side, a duster had better be used as a blinder. Now the operator should take the clean fleam, moistened with his saliva—not dipped in bad, rancid oil or lard, or anything which will inoculate—in

his left hand, holding it between his forefinger and thumb, and make steady pressure, *without dragging upon the skin*, upon the vein with the remaining fingers of his left hand. He must be patient, and keep up a steady pressure thus—resting his right hand, which holds the blood-stick, upon the mane—for two or three minutes, or until the vein has risen and is quite ropy and tense. He now quietly lowers the fleam, and lays it along the vein in its central axis, and then *quietly* brings the stick forwards and gives the fleam a heavy blow, when there will be a spurt of blood. It is not essential, but it is far better, to keep the left hand quietly pressing upon the vein, and let the assistant or a third person hold the receptacle for catching the blood. A third person is best, then it allows the head to be kept elevated and steady, and allows the operator to keep up his steady pressure to the end.

Before commencing, it is a good plan to form a rough estimate of the capacity of the receptacle for the blood—usually a common stable pail; then we stop when six pints have been drawn for a large horse and a heavy bleeding, or when four, or even three pints, have been abstracted for a bleeding whose object is to relieve the right side of the heart—as in enteritis, etc., where we have a small, wiry, empty artery, and the blood at first flows black and "treacly" in a thin stream. A good indication for stopping the bleeding, and pinning-up, consists in a larger flow commencing, of less dark colour, etc. Of course, when the amateur is used to the feel of the pulse, he finds the artery grow larger and softer *at the time* the blood begins to flow freer and become better in colour, and then he has the further assurance of the desired end being gained. Long, starving, wasting diseases generally, and some blood diseases, cause wiry, empty arteries; but where there have been no such causes at work, and the horse within a few days, or it may be hours—as in enteritis—comes to have a thin, wiry pulse, it is a sure and certain indication of a crowded overwhelmed right

heart, which needs relieving, when the bleeding never fails to deliver the animal from such a disastrous combination. Even in human practice, where general bleeding has been so largely abandoned these forty years past, the above indication has always called forth the lancet with all reasonable practitioners.

The altered colour is a sign for stopping in the above-named condition; then sighing is a sign for stopping under any circumstances; so is a dilated pupil, though sighing and a dilated pupil are usually present at the same time. We hardly need say that the less blood drawn, sufficient for our purpose, the better, and under no circumstances should a horse be bled beyond six or eight pints. If the hand be not used to press on the vein, but the edge of the receptacle be used, care has still to be taken lest we drag on the skin.

Pinning-up (*see* WOUND-CLOSING, p. 196) is the most important part of the operation. We take a common pin and pinch its extreme point with our teeth so as to flatten it somewhat; then we gently seize the lips of the skin wound between the left forefinger and thumb, and carefully evert the edges of the wound, and lightly brush away with our fingers any hair or foreign body that may be there. Next, we transfix the skin with the pin, inserting and bringing out the pin about half-an-inch, or less, from the edges of the wound, and having taken a little very soft tow, dipped in the blood, we make a figure of eight twist around the pin, not too tightly; then we push the pin home—that is, push it up to its head—and break off the point by shutting down the blade of a pocket-knife upon it, taking care not to drag upon it.

The horse should always have his head tied up high, and thus steadied, for one or two hours after bleeding, when practicable. We ought never to forget that an opiate (tincture of opium as a draught, or morphia hypodermically) *in suitable cases* acts like a charm after general blood-letting; it is, in fact, the coffee after dinner of therapeutics.

Bleeding from the Toe.—By universal consent, bleeding at the toe, in congestions and inflammations of the foot and shoulder, is excellent practice; it is also of some service in bad sprains, when fresh, in any part of the leg.

We require no restraining apparatus, but after having removed the shoe we pare the horn at the toe a very little, then we draw the turned point of a drawing knife along the same line from the point of the frog to the extremity of the toe, again and again, until we make a deep groove, from which the blood flows. After the blood begins to flow freely, we place the foot in a pail half full of hot water, and encourage it to bleed as long as it will. We then take a pledget of tow dipped in Friar's-balsam and stuff it into the bleeding place, put on another pledget over this again, and tack on the shoe lightly, using two pieces of stick to batten down the tow.

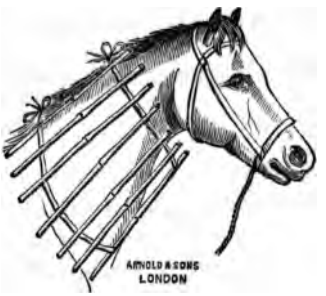
Bleeding by Scarifying.—When a local soft part has to have blood abstracted from it, we do this best by taking Arnold's guarded lancet, and setting it so as to pierce the part to the required depth. We then stab the part in several places, and foment it with hot water, where the part cannot be placed in hot water, to encourage the bleeding. It is a highly useful procedure.

Blistering.—The application of cantharides blister is a frequent operation in horse practice, the legs being the parts most often operated upon.

The part to be blistered is first prepared by having its hair cut as short as possible with scissors; then the parts below in continuity with the surface to be blistered are thickly smeared over with lard, to protect them from any blister that may melt and run over them; then the blister is rubbed in, a little at a time, with the finger-tips, or little more, of one hand, for at least forty minutes, taking care to rub wrong way of the hair, so as to cause warmth and friction.

After blistering the head of the horse is to be tied short

so that he cannot get his teeth to the itching parts and tear them. The head is to be thus tied for forty-eight hours, and when let loose, cradles are to be placed on his neck. Arnolds make strong light cradles of bamboo, as here depicted. During the time the head is fixed, all straw is to be removed away from the legs.



BAMBOO CRADLES.

It is well to give a bran-mash the night before blistering, and to give an aloetic carthartic bolus at the time of blistering; so that whilst the head is fixed he requires bran-mashes and chilled water.

Never blister more than two legs at a time; the blistering of all four legs has killed many a horse. In such cases there is fever, and sometimes congested kidneys and suppressed urine.

Throughout, the discharge from the blistered surface is to be kept well away by fomentation with warm soap and water. The surface, when thus cleared and dried, is to be anointed with fresh lard. The first dressing of this kind will be required when the head is released (at the end of forty-eight hours), and the duty will have to be repeated every morning for a time, then every other day, and so forth.

If the blister has acted less freely than we could wish, instead of dressing the surface with lard we may smear it over with blistering colloid (F. xlv.)

Catheterising.—The catheter has frequently to be passed in equine practice. We may here say that to describe the passing of the mare catheter would be useless, as few amateurs could benefit by the description.

The only difficulty in passing the horse catheter consists in

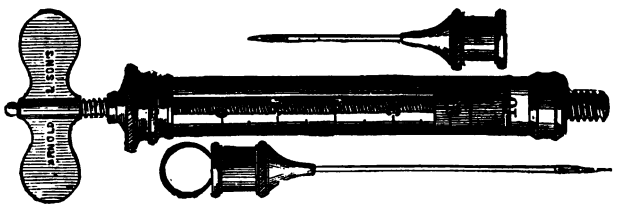
getting the catheter to take the very sharp turn round the pubic bone. The author would like to see the pliable india-rubber catheters used in horse practice, such as are used in human practice.

Having larded the catheter freely, and drawn the penis out of the sheath—by no means always an easy task—the catheter

HORSE CATHETER.

is paid into the urethra bit by bit, until the operator judges that the end has almost reached the anus; then the pressure must be more steady and tentative, time being allowed for the catheter to bend itself and take the sharp turn we have alluded to. In case the catheter will not do so, we stand on the off (right) side of the horse, keep the catheter *in situ* with our right hand, whilst we feel for the point in the middle line just below the anus with our left hand, and gently press its nose, so as to make it take the turn.

Injecting Morphia.—Elsewhere we have said that no horse-owner should be without a clinical thermometer; we here say

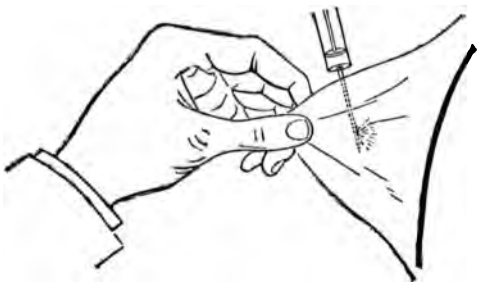


HYPODERMIC SYRINGE.

that no horse-owner should be without a hypodermic syringe. It frequently happens that a horse has a full stomach, and requires a narcotic to allay pain—in acute indigestion, for instance—so that medicine given by the mouth would mingle

with the food, and be hours in taking effect, and death itself result as a consequence of delay. By the hypodermic method the narcotic, or whatever it is we inject, takes almost instantaneous effect, and, moreover, does not interfere with the digestive organs any more than with any other organ.

A drawing is here given of Arnold's veterinary syringe. The way to use it is as follows:—After charging the syringe, the operator stands in front of the near (left) shoulder of the horse, and pinches up the loose skin over the breast bone well in front,



INJECTING UNDER THE SKIN.

and drags it downwards. This draws the skin from the flesh and forms a kind of hollow pyramid. The nozzle of the syringe is now plunged through the skin into the centre of the pyramid, and the piston slowly pressed down. It is a good plan to grasp the skin about the puncture for a moment after withdrawing the nozzle, to prevent any part of the injection leaking out.

It is a matter of indifference what part of the skin we choose for the operation, provided it be loose and capable of being well drawn away from the flesh. The side of the neck is a good place enough.

Setoning.—In order to pass a seton we require a suitable needle—a long, straight needle for ordinary setons, and a

short, curved, seton needle for the frog or the throat—and a suitable, pliable, absorbing substance, such as tape, to thread it with.

Having dipped the tape, or whatever we use, in a suitable digestive (spirits of turpentine is as good as any, or, perhaps, common fly blister), we pinch up the skin, if we are inserting the seton only under the skin, and nick it with a knife to the extent of half-an-inch or three-quarters; then we push the needle, making it travel along beneath the skin; and when it has travelled far enough, we feel for its point, nick the skin

SETON NEEDLE.

close to it, and bring out the needle. We now secure the tape, either by tying its two ends together, or by tying a little piece of wood to either end. We now see-saw the tape through the track once or twice, and the operation is complete. The objection to tying the two ends of the tape together is that a loop is thus formed, which may hook itself to any projecting substance, and the whole seton may thus be torn out and perhaps the horse disfigured. In practice, though, this may almost be disregarded, likely as it may seem. We must, however, never lose sight of the fact that the seton may cause itching of the part, and the horse may make short work of the seton with his teeth by tearing it out if cradles be not worn.

The discharge from the seton is to be treated like the discharge from a blister, and the seton itself kept clean and refreshed from time to time with digestive. After a seton-track has grown used to one digestive, we choose another, and so keep up a discharge longer by ringing changes on our various digestives or tissue irritants.

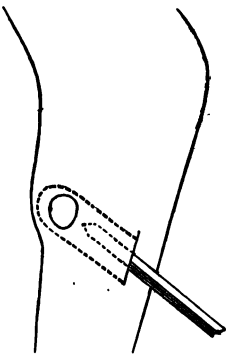
A twitch and a blind is all the restraint we require in

passing a seton. The above description will serve also for a throat seton inserted over the larynx, whilst we have described the frog seton under FOOT OPERATIONS.

Rowelling.—Exactly the same effects are produced by the seton and rowel; the latter, however, is more useful and more used for short periods, and is far easier to introduce, the only instrument required being a pocket-knife.

We pinch up a piece of skin with our left forefinger and thumb, and nick it with a pocket-knife. Then we introduce the thumb, and tear the skin away from the parts beneath for a couple of inches all round the hole, and stuff the cavity so made with tow, soaked through and through with spirits of turpentine, or other digestive.

Hock Rowel.—So much importance is attached to marks of treatment on the hock, and so closely are the hocks examined during purchase, that some years ago the late Mr. Frier, of Kirkby Fleetham, Yorkshire, introduced a neat method of treating bone spavin which he named "causticking," but which is really a neatly placed rowel over the spavin, dressed with a powerful digestive. The author has performed the operation scores of times with excellent results, without the least mark remaining after the second month or less.



CAUSTICKING A HOCK.

After casting the horse and liberating the leg to be operated upon, and holding it still with webbing as it rests upon a tight bundle of straw, an incision with a lancet is made lengthwise on the hock, penetrating the skin only. The incision should be about an inch and a half in length, and its situation, taking its centre as the place of measurement, determined in the following way:—We measure, from the posterior part of the

spavin, straight backwards an inch and a half; then we measure an inch and a half direct *downwards* below this again, and here make our incision.

With a probe-pointed seton needle we now separate the skin all over the spavin from the part beneath, taking care that no part of the cavity thus made is below the level of the lowest part of the incision. The skinned part we represnet by a dotted line in the wood-cut.

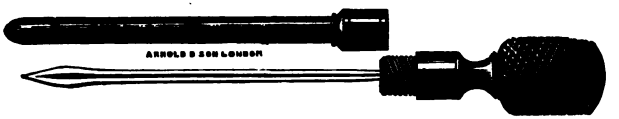
The next step consists in introducing several small pledgits of tow with a silver probe, taking care that the tail-end of *each* pledgit hangs out of the incision. The digestive used should consist of equal parts of oil of origanum, spirits of turpentine, and common fly-blister, made into a very thin paste. Some carry out the operation of hock-causticking literally by introducing caustic, such as corrosive sublimate. This is unnecessary, and may do much harm, by causing a slough that may destroy the skin, &c.

Dressing this rowel is the most critical procedure attending the operation. If the pledgits be not all removed, a sac of matter (pus) may collect and burst through the skin, and a blemish result. After twitching and blinding the horse, the hock should be well fomented and every piece of tow removed, and the cavity cleared of all pus by passing the fingers over it with pressure from above downwards. Fresh pledgits are to be introduced as at first, well smeared with the digestive. The first dressing should take place in thirty-six hours or so after the operation, and be repeated every morning.

Any granulations (proud flesh) remaining on the edges of the incision are to be scraped off with the bowl edge of a teaspoon, by using all the force necessary for their entire removal. The old way of dealing with granulations (by strong zinc or copper washes) is tedious, and leaves a blemish where the granulations have been.

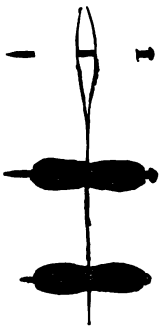
Wound Closing.—The accompanying wood-cut will illustrate

better what is said under the head of WOUNDS than a lengthened explanation. A pin is represented as thrust through the lips of the wound—the length of the pin required, and strength



DIRECTOR FOR INSERTING LARGE PINS.

also, depend upon the size of the wound, of course—entering one lip, and emerging from the other at a good distance from the respective edges of the wound. The next step consists in lacing around the two ends of the pin, in figure of eight (8)



STEPS IN PINNING UP A WOUND.

form, some tow, or very soft, thick string, and by gentle, firm pressure with this, bringing the lips of the wound into correct apposition. The last step consists in pushing the pin up to its head, and taking off the point-end, as in the diagram, so that it may not hook on to anything, and get displaced.

FORMULÆ, OR PRESCRIPTIONS.

Dose.—We practically divide horses into three classes in considering doses—small, medium, and large. In other words, we divide them into (1) ponies, and very small horses under twelve hands or very slightly over it; (2) into horses from fourteen to sixteen hands and a half; and (3) the very largest, such as dray and waggon horses, from sixteen to eighteen hands.

When a dose is mentioned in this work, it is meant for a medium-sized horse; therefore very small and very large horses are to be calculated for accordingly.

F. throughout the text stands for formula, and the number after it for the number of the formula; thus, F. xiv. means the fourteenth formula.

ANTACIDS.

These are direct and indirect. The former neutralise acidity in the stomach and bowels, whilst the latter get taken up into the blood, and neutralise the acidity of the secretions.

Of course some antacids are both direct and remote in action. When a course of alkalies is indicated, they should be combined with a vegetable tonic.

F. I.

Take of—

Bicarbonate of soda	3 ounces.
Fowler's solution of arsenic	2 drams.

Rub the two well together in a mortar, and divide into twelve powders, of which give one before meals, three times a day, either in the drinking water, or made into a drench with

water. *Useful in acidity of the stomach and flatulence.* An acid may be taken after the meal, when this alkali is given before it. (*See* DYSPEPSIA.)

F. II.

Take of—

Bicarbonate of soda	½ ounce.
Scheele's hydrocyanic acid	10 drops.
Infusion of gentian	6 ounces.

Mix for a draught. The whole to be given before eating, twice or thrice a day. *Useful in nettle-rash and other skin affections, which are greatly influenced by the state of the digestive organs.*

F. III.

Take of—

Citrate of potash	½ ounce.
Tincture of henbane	½ ounce.
Barley water sufficient to make	1 pint.

Mix for a draught. A draught like the above to be given twice, thrice, or oftener, during twenty-four hours. *Useful in cystitis, also in gravel or calculous disorders of an acid nature.*

ANTHELMINTICS.

These are medicines which either destroy or expel worms. They are divided into three classes:—

1. Those which destroy, but do not expel.
2. Those which expel without destroying.
3. Those which destroy and expel.

F. IV.

Take of—

Spirits of turpentine	3 ounces
Raw linseed oil	16 ounces

Make into a draught, which must be given fasting, and

followed by a cathartic, as described under article ENTOZOA. *Useful in the case of round worms.*

F. VI.
Take of—
Cathartic mass F. xii. . . . . 1½ ounces.
Boiling water . . . . . 1 pint.

Dissolve the mass in the boiling water, and add cold water till reduced to being tolerably warm, then give as an injection, *after* clearing out the rectum with an ordinary soap and water injection. *Useful in thread worms.*

F. VII.
Take of—
Liquor of perchloride of iron . . . . . 2 ounces.
Freshly made lime water . . . . . 1 quart.

Mix, and give as an injection, *after* clearing out the rectum by an ordinary soap and water injection. *Useful in thread worms.*

F. VIII.
Take of—
Powdered sulphate of iron. . . . . 6 ounces.
Manna . . . . . a sufficiency.

Beat up into a mass and divide into twelve boluses of which give one night and morning. *Useful, where worms have long resided in the bowels, in clearing the bowels of excess of mucus, which forms a nidus for the worms.*

ASTRINGENTS.

These are medicines whose primary effect is to diminish secretion and excretion. They act in two ways:—1, by diminishing the alkalinity of the blood they increase its coagulative tendency; 2, by condensing albuminous tissues, also by

inducing contraction of muscular fibre, they diminish the ducts of glands, and the capillary blood vessels.

F. IX.

Take of—

Liquor of perchloride of iron	2 drams.
Dilute nitro-muriatic acid	2 drams.
Infusion of quassia	6 ounces.

Make a draught, and give one like it three times a day. *Useful in profuse staling* (diuresis).

F. X.

Take of—

Liquid extract of bael	1 ounce.
Tincture of kino	2 drams.
Syrup of poppies	½ ounce.
Infusion of matico	6 ounces.

Make a draught, and give such a one every three hours, as long as required. *Useful in dysentery, or diarrhœa.*

F. XI.

Take of—

Powdered opium	20 grains.
Prepared chalk	2 ounces.
„ starch (as for laundry purposes)	16 ounces.

Mix all together in a mortar and give cold as an enema. The same to be repeated three times a day. *Useful in obstinate diarrhœa and in dysentery.*

CATHARTICS.

Cathartics are medicines which increase or accelerate the evacuations from the bowels.

Some cathartics act by increasing the vermicular movement of the bowels; others by increasing the intestinal juices, whilst others act by increasing the supplementary intestinal secretions, such as the bile.

In health the bowel evacuations of the horse are irregularly rounded, dark balls (dung balls), when the evacuation is spoken of as "formed."

Cathartics may be divided into three classes :—

1. *Laxatives.*—When the evacuation drops close behind the heels in a pultaceous mass, instead of being "formed," the bowels are spoken of as being relaxed.

2. *Purgatives.*—When the evacuation is shot out away from the horse, the evacuation being thinner and more watery than in the relaxed state, the horse is spoken of as being "purged."

3. *Hydragogue Purgatives.*—The action of these is like the action of purgatives, except that the evacuation is quite watery, showing that the bowel secretions are in greater abundance still.

Cathartics differ widely also in their sphere of action. Some act only on the large intestine, such as aloes; others act only on the small intestines; whilst others, again, act on the entire length of the gut. Therefore the choice of a cathartic is frequently of vital importance in the treatment of disease. When "physic" is ordered, a cathartic is meant, and a combination of drugs is nowhere so useful as in the ordinary carthartic (aloes, in horse practice, forming the backbone of the ordinary cathartic), which should be of a truly compound nature, so as to clear out the entire canal. Some drugs, though not themselves cathartics, greatly increase the effects of cathartics, such as sulphate of iron, nux vomica, tartarised antimony, &c.

When possible, the horse should always be prepared for a cathartic. To do this effectually a copious bran-mash may be given for supper one, two, or more nights, and the cathartic on a succeeding night or first thing on a morning following.

After giving a purgative, or a hydragogue purgative, bran-mashes and chilled water should alone be given, until purging

commences. All hay, corn, &c., is to be withheld. When purging commences, a very little hay may be added to the feed after the sixth hour.

When the purging ceases, and the evacuations are just laxative, and approaching the "formed" state, the "physic" is said to be "setting." It is said to have "set" when the dung has resumed its balled shape.

The action of cathartics is:—

1. To clear out the bowels.

2. To increase the secretion of the intestinal lining, and thus carry away inflammatory, noxious, and other matters which may have lodged in any part of the system.

Of the four great emunctories of the body (the bowels, kidneys, lungs, and skin) which require to be kept active throughout most illnesses, the bowels are of the first and greatest importance; therefore, *to clear out the alimentary tube at the commencement of an illness, and to keep the bowels going throughout almost all illnesses*, is a truly golden maxim in the case of both man and beast.

Cathartic Mass.

ALOES.

F. XII.

Take of—

Barbadoes aloes in small pieces	12 ounces.
Powdered nux vomica	1 dram.
„ ipecacuanha	2 drams.
„ sulphate of iron.	2 ounces.
„ ginger	1½ ounces.
Extract of hyoscyamus.	2 ounces.
Oil of aniseed	1 dram.
Treacle	6 ounces.

Place the aloes and treacle in a water-bath over a slow fire for an hour and a half, occasionally stirring them. Mix the remaining ingredients thoroughly; then pour the aloes and

treacle into a wide bowl, and stir in the mixed ingredients, and allow the mass to set.

Note.—The aloes forms just half the mass; therefore, when we have determined how many drams of aloes to give, we weigh out twice the quantity of mass.

The above mass is prescribed largely throughout the book, and is really an excellent ordinary mass.

Dose.—Hunters, carriage horses, and harness horses, generally being of the medium size, require a "six-dram" ball—*i.e.*, they require six drams of aloes, therefore twelve drams of this mass; waggon and dray horses require seven or eight drams of aloes; ponies, of twelve hands, require less, according to size and disorder—perhaps three drams or four.

Oleaginous Cathartics.

Castor Oil.

F. XIII.

Take of—

Cold-drawn castor oil	16 ounces.
Solution of potash	3 ounces.
Oil of lemons	2 drams.
Oil of myrrh	½ dram.
Simple syrup	2 ounces.
Water that has been boiled	8 ounces.

Rub the castor oil, also the other oils, and the solution of potash well together in a mortar; then add the other ingredients, still stirring. Shake well before administering.

For one draught. To be given with a drench horn or out of a wine bottle.

Linseed Oil.

F. XIV.

Take of—

Raw linseed oil	16 ounces.
Oil of aniseed	2 drams.
Spirits of sweet nitre	2 ounces.

Mix and shake well together for one draught. This forms a perfectly safe laxative in cases where other cathartics are badly tolerated.

LINSEED OIL AND OPIUM.

F. XVI.

Take of—

Raw linseed oil	16 ounces.
Oil of turpentine	2 ounces.
Tincture of opium (laudanum)	1 ounce.

Shake well together, and give as a draught. This draught, known as Professor Dick's colic draught, is exceedingly useful where pain is to be allayed and the bowels slightly moved. *Useful as a first draught in spasm of the bowels. It has almost a magic effect in restraining a simple diarrhœa.*

Carminative Cathartic.

F. XVII.

Take of—

Cathartic mass F. xii.	12 drams.
Tincture of assafœtida	2 ounces.
Strong tincture of ginger	1 ounce.
Boiling water	8 ounces.
Cold water	a sufficiency.

Dissolve the cathartic mass in the boiling water, cool down with the cold water, then add the other ingredients. For one draught. *Highly useful in flatulent colic, also in all cases where a speedy action of the bowels is desired.*

Alterative Cathartic.

F. XVIII.

Take of—

Powdered Barbadoes aloes	2 drams.
„ resin	3 drams.
„ nitre	3 drams.
„ ginger	2 drams.
Castile soap	2 drams.

Beat up into a mass for one bolus. *A highly useful gentle, cooling laxative, with some diuretic action also.*

Bronchial Cathartic.

F. XIX.

Take of—

Cathartic mass F. xii.	2 drams.
Tartarised antimony	1 dram.
Citrate of potash	4 drams.

Beat up into a mass for one bolus. *Highly useful and efficient as a gentle laxative in congested lungs, bronchitis, pneumonia, broncho-pneumonia, and also fevers and inflammations, where inflammation or congestion of the mucous membrane of the air passages renders it unsafe to give ordinary cathartics for fear of superpurgation.* It may be noticed that it only contains one dram of aloes, but the antimony with this quantity in bronchitic affections renders this small dose of aloes efficient.

Extraordinary Cathartic.

F. XX.

Take of—

Croton oil	25 drops.
Olive oil	3 drams.

Mix, and squirt it into the mouth with a small syringe. *Useful in delirium, when we are unable sufficiently to control the horse to give medicine in the usual way.* A powerful drastic cathartic, not to be given without due consideration.

DIAPHORETICS.

Medicines which cause Perspiration.

We again call attention to the skin, as one of the four emunctories of the body (bowels, kidney, skin, and lungs) which require to be kept active during most illnesses. Diaphoretics are divided into two distinct classes :—

1. Those which act by *stimulating* the vessels of the skin.
2. Those which *relax* the closed vessels of the skin.

The former act by stimulating or rousing the whole circulation; the latter act by depressing a portion of the nervous

system. As examples of the first we have hot grog, Mindererus spirit, Dover's powder, serpentary root, etc.; whilst the best examples of sedative perspirants of the second class are bleeding to faintness, antimony, and ipecacuanha. The chief uses of diaphoretics are—

1. To keep the skin gently perspiring in fevers and internal inflammations.

2. To relieve the kidneys, when these organs are incapable of acting.

3. To restore lost action in a dry, harsh skin, in skin and constitutional diseases.

Diaphoretic medicines are aided by exercise, warm clothing, hot air, or steam baths, copious draughts of tepid water, etc.

Wet sheet packing is a most efficient diaphoretic, and far too much neglected in veterinary practice.

During the administration of diaphoretic medicines the surface of the body must be well clothed in woollen rugs and bandages, and plenty of tepid water given to drink.

Stimulating Diaphoretic.

F. XXI.

Take of—

Spirits of sweet nitre	½ ounce.
Compound tincture of camphor	1 ounce.
Mindererus spirit	2 ounces.
Barley water	6 ounces.

Mix, and give such a draught every four hours. *Useful in fevers, etc.*

Sedative Diaphoretic.

F. XXII.

Take of—

Fleming's tincture of aconite	5 drops.
James' powder	1 dram.
Cold linseed tea	6 ounces.

Give as a draught, to be repeated every four or six hours,

in the early stages of fevers and inflammations of an acute type in vigorous subjects. It must not be given beyond the first twenty-four hours.

DIURETICS.

These are medicines which increase the flow of urine. In the language of the stable they are called "staling" medicines, and as the diuretic usually takes the form of a ball, we usually hear them spoken of as "staling balls."

In using diuretic medicines we must always remember that the kidneys and the skin are *vicarious* organs, either acting for itself and the other without much bidding. Therefore, if we wish the kidneys to act thoroughly, we must keep the skin from acting by keeping it cool, or actually cold. Diuretics act by

1. Stimulating the substance of the kidneys.
2. Also, by increasing blood pressure.
3. By liberating substances in the economy which themselves pass off by the kidneys, or by setting free obstacles to the due secretion of urine.

The most useful in horse practice is the first set of diuretics, which includes resin, turpentine, juniper, etc.

The horse's kidneys quickly respond to diuretics; hence the extensive abuse of "staling balls" by the lower order of grooms and stablemen.

Diuretics cause a good deal of weakness for the time.

Diuretic Mass.

F. XXIII.

Take of—

Venice turpentine	3 ounces.
Oil of juniper	2 drams.
Powdered resin	9 ounces.
,, nitre	6 ounces.
,, hard, dried soap	6 ounces.

Melt the resin, soap, and turpentine together, and when

cooling, stir in the juniper and nitre. For twenty-four boluses; one or two for a dose. *Useful as an ordinary "staling ball" in local dropsies, such as "filled" legs, etc., etc.*

Stimulating Diuretic.

F. XXIV.

Take of—

Tincture of digitalis	2 drams.
Spirits of juniper	1 ounce.
Hot gin toddy	6 ounces.

Mix, and give as a draught. *Useful in lung and liver congestions, with burdened, labouring, weakened heart.* In such circumstances the four legs are more or less "filled," etc. The draught may be repeated every six hours with much benefit. It is a most valuable combination in dropsy of the chest and abdomen, *also* in the effusion left after pleurisy, etc.—diseases beyond the scope of the present work.

EXPECTORANTS.

These are medicines which increase, or alter the secretion (phlegm) of the bronchial tubes. Expectorants belong to one of two orders—those which stimulate the lining membrane of the bronchial tubes, or those which depress it; hence we have

1. Stimulating expectorants—such as squills, senega, benzoin, balsams of Tolu and Peru, etc.

2. Sedative expectorants. These act by nauseating, such as tartarised antimony and ipecacuanha; less active as such in the horse, it may be remarked.

Expectorant Bolus.

"Cough Ball."

F. XXV.

Take of—

Powdered gum ammoniacum	2 drams.
„ camphor	2 drams.
„ squills	2 drams.
Balsum of Tolu	a sufficiency.

Make into a bolus, and coat with gelatine—paper being less useful if the bolus is to be kept any length of time before being given. *Useful in dry states of the bronchial mucous membrane, and in hard, dry cough, etc.* One may be given every six hours. The camphor requires saturating with spirits of wine, in order to powder it.

Sedative Expectorant.

F. XXVI.

Take of—

Extract of belladonna	½ dram.
Tartarised antimony	1 scruple.
Powdered ipecacuanha	1 dram.
„ liquorice	4 drams.
Treacle	a sufficiency.

Beat up into a bolus, and give one like it every six hours, carefully watching its effects (manifested in dilating the pupils), and discontinuing it altogether, or omitting it for a dose. *Highly useful in moderating the amount of secretion of the bronchial tubes when this is too copious.* It should be coated with gelatine rather than rolled in paper, if sore throat be present, or dissolved in a little warm linseed tea, and given as a draught.

NARCOTICS.

These are medicines which act upon the nervous system. Their action is manifested by the alleviation of pain, when they are called *anodynes;* or by inducing sleep, when they are called *soporifics* or *hypnotics.*

The most useful and the most used narcotic is opium; or one of the numerous products of opium, called morphia.

Opiate Draught.

F. XXVII.

Take of—

Tincture of opium (laudanum)	1 ounce.
Brandy	2 ounces.
Hot water	8 ounces.

Mix as a draught, and give. It may be repeated in two, three, or more hours, according to the needs of the case. *Useful in urgent pain.*

Opium Bolus.

F. XXVIII.

Take of—

Powdered opium	1 dram.
,, potassium bromide	3 drams.
Extract of liquorice	a sufficiency.

Make into a bolus, and give. *Useful in producing sleep, given at bed-time in and after exhausting illnesses. An excellent calmative after excitement.*

Morphia is better given under the skin, as described in its place under OPERATIONS, *which see.*

SEDATIVES.

These may be defined as medicines which depress (from *sedo*, to allay) the powers, as below enumerated.

1. Pulmonary (lung) sedatives.
2. Spinal cord sedatives.
3. Stomach sedatives.
4. Vascular (blood circulation) sedatives.

Pulmonary Sedative.

F. XXIX.

Take of—

Tincture of lobelia	2 drams.
Barley water or linseed tea	6 ounces.

Mix, and give as a draught; to be repeated every hour till its effects are obvious. *Useful in asthma* ("broken wind"), *during a severe paroxysm, also in "thick wind," "wheezing," &c.*, after the bowels have been cleared out by a well-chosen laxative—F. xii., for instance. It must not be repeated beyond a fourth or fifth dose.

Spinal Sedative.

F. XXX.

Take of—

Scheele's Prussic acid	5 drops.
Powdered bromide of potassium	2 drams.
Water, cold	6 ounces.

Dissolve, and give as a draught, which may be repeated three to six times in twenty-four hours. *Useful in chorea, tetanus, and other disorders dependent on exalted action of the central nervous system.*

Stomach Sedative.

F. XXXI.

Take of—

Subnitrate of bismuth	1 dram.
Bicarbonate of soda	1 ounce.
Gum water	6 ounces.

Rub down, and give as a draught. To be repeated every three hours. *Useful in flatulence and acidity, also where the stomach has been irritated by a poison, &c.*

Vascular Sedative.

F. XXXII.

Take of—

Fleming's tincture of aconite	5 drops.
Water	6 ounces.

Give as a draught, and repeat in an hour; then two drops of the aconite are to be given once every succeeding hour up to the twenty-fourth. Aconite is never to be given longer than twenty-four hours. *Aconite forms the sheet anchor in many forms of violent inflammation; but the amateur cannot be too careful with such a potent agent.* The pulse, which it slows and weakens, should be carefully watched, that the aconite be not pressed too far. Constant deglutition (swallowing) marks its full effects. It must be carried no further than this, but its

action may be kept up for twenty-four hours by *small* doses if the deglutition lessens.

Another Vascular Sedative.

F. XXXIII.

Take of—

Powdered corm of colchicum	2 drams.
Cathartic mass F. xii.	6 drams.

Beat up into a bolus. To be repeated three times in twenty-four hours, unless purgation commences before the third dose. *It is a specific in rheumatic inflammations—periodic ophthalmia, for example.*

STIMULANTS.

Medicines which rouse the vital powers into temporarily increased action are called stimulants.

In equine practice two are principally used, namely :—

1. Stomachic stimulants.
2. Vascular stimulants.

Stomachic Stimulant.

"CORDIAL BALL."

F. XXXIV.

Take of—

Powdered caraway seeds	½ ounce.
,, ginger	2 drams.
Extract of gentian	a sufficiency.

Beat up into a bolus, and give one like it every night and morning, or occasionally. *Useful in weak stomach after debilitating illness, also after hard work, after long hours in cold and wet, or after a long day, especially when there has been long fasting.*

Vascular stimulants are of two orders :—

1. Those which stimulate the general circulation.
2. Those which stimulate the smallest arteries (arterioles.)

General Stimulant.

F. XXXVI.

Take of—

Tincture of digitalis	1 dram.
Sulphuric ether.	½ ounce.
Water, cold	6 ounces.

Mix, and give as a draught. It may be frequently repeated; perhaps every four hours is best. Hot whisky toddy, hot brandy and water, etc., are also good substitutes for the above. *The indications for the above are too obvious for comment.*

Arteriole Stimulant.

F. XXXVII.

Take of—

Powdered sulphide of calcium	2 drams.
,, guaiacum resin	1 ounce.

Mix thoroughly, and divide into twenty-four powders, and give one in gum water, or thick oatmeal gruel, every four hours. *Useful in ripening abscesses, in converting thin unhealthy pus into creamy laudable pus; highly useful in "cold" rheumatism, in diseases of the skin attended by coldness and dryness, etc.* The powders are to be kept dry till used, otherwise the calcium decomposes, and gives the rotten-egg smell of Harrogate water, which it much resembles in action.

TONICS.

These are medicines which give tone or vigour to some organ, or to the entire system. They are divided into four groups:—

I. Blood tonics.
II. Nerve or nervine tonics.
III. Stomachic tonics.
IV. Vascular tonics.

Blood tonics primarily alter the character and composition of the blood itself. Iron and arsenic are the principal blood tonics.

Before giving the blood iron, arsenic, or any other drug to feed upon, it is necessary first of all to clear the blood stream of all impurities; otherwise we only add one impurity more. A tender, sickly plant cannot take advantage of sunlight if surrounded and smothered by weeds. Before giving a course of iron or arsenic, first give a suitable laxative, and by all other means possible deprive the blood stream of impurities.

Steel Tonic.

F. XXXVIII.

Take of—

Citrate of iron and ammonia	6 drams.

Powder it and divide into twelve powders. Give one of these two or three times a day on a mash, or dissolved in the drinking water, or as a drench in water. *An excellent light tonic after debilitating illnesses, etc., where the stomach and bowels are weak.*

Steel Tonic Bolus.

F. XXXIX.

Take of—

Powdered sulphate of iron	2 scruples.
,, nux vomica	10 grains.
,, ginger	2 drams.
,, liquorice	4 drams.
Extract of gentian	a sufficiency.

Beat up into a bolus. A bolus like the above may be given night and morning for some days, or a week or two with much advantage, taking care to give a bran-mash with boiled linseed in it at night, now and then, to prevent the bowels becoming constipated by the iron. *Useful where iron is indicated, in*

those conditions when the stomach and bowels are not too weak to bear the sulphate.

Note.—The custom of giving four drams and more at a time of sulphate of iron should be abandoned.

Nervine Tonic.

F. XL.

Take of—

Fowler's solution of arsenic	½ dram.
Infusion or decoction of cinchona	6 ounces.

Mix, and give as a draught. Such a one may be given twice or thrice a day, a short time before food, and washed down with two or three go-downs of water.

Stomachic Tonic.

F. XLI.

Take of—

Dilute nitro-muriatic acid	2 drams.
Infusion or decoction of hops	6 ounces.

Mix, and give as a draught. One like this may be given three times a day, half-an-hour or an hour before food. *Highly useful in creating an appetite, and strengthening the stomach after those cases, such as inflammation of the bowels, lungs, etc., where the stomach has largely shared in the general weakness.*

Vascular or Heart Tonic.

F. XLII.

Take of—

Tincture of digitalis	2 drams.
Liquor of the perchloride of iron	1 dram.
Infusion or decoction of quassia	6 ounces.

Mix, and give such a draught every six hours. *Useful after debilitating illness, when the circulation remains feeble.*

Note.—The liquor is now almost universally used by medical men instead of the tincture of iron, being quite as stable and

good a preparation, and of the same strength, and being far cheaper. Indeed, for ordinary purposes, the spirit of the tincture is only wasted. Several draughts like the above may be put into an eight-ounce bottle, by using the *concentrated* infusions, with directions to "give in water."

EXTERNAL APPLICATIONS.

EPISPASTICS.

Common Blister.

"FLY BLISTER."

F. XLIII.

Take of—

Powdered cantharides	2½ ounces.
Resin and lard	of each 8 ounces.
Oil of origanum	½ ounce.

Melt the resin and lard, and when nearly cold stir in the flies and the oil thoroughly. *This is an excellent form of "fly" blister.*

Mercury Blister.

F. XLIV.

Take of—

Mercury bin-iodide (red iodide)	1 dram.
Lard, or vaseline	7 drams.

Mix well together. This makes a good blister, where mercury is preferred to flies. An excellent blister is made by mixing the above blisters, equal quantities of each.

Liquid Blister.

XLV.—The liquid blister of the British Pharmacopœia, sold by all chemists, is recommended in preference to the many fancy preparations sold by "cattle medicine" vendors.

A still neater preparation for horsemen is the recently introduced "blistering colloid," which the author strongly

recommends, both for an ordinary blister when preferred in the liquid form, and for daily application as a so-called *sweating* blister.

Mustard Application.

F. XLVI.

Take of—

Powdered mustard	4 to 8 ounces.
Warm water	a sufficiency.

Mix into a thin paste, and rub the whole quickly into the skin over the part affected. *Useful in sore throat, and in all other cases where a smart revulsion short of actual vesication is needed.* It may be washed or brushed off after an hour, or when dry.

Mustard Poultice.

F. XLVII.

Take of—

Powdered mustard	1 to 2 ounces.
Linseed meal in poultice	a sufficiency.

Sprinkle the mustard over the surface of the poultice, and apply. *Useful in cases where a mild form of counter-irritation is to be kept up for some hours.*

Ammonia and Turpentine Application.

F. XLVIII.

Take of—

Strong liquor of ammonia	2 ounces.
Liniment of turpentine, B.P.	1 ounce.
Olive oil	3 ounces.

Mix all together by thoroughly shaking. A most useful "rubbing oil," which, however, causes the hair to fall out and large patches of the outer skin to fall off for a short time, but leaves no permanent blemish, as the hair grows again. *Useful in laryngitis, strangles, etc., where smart counter-irritation is to be frequently applied to prevent the parts being permanently*

injured. A useful digestive also for dressing setons, rowels, fired surfaces, etc.

EMBROCATIONS.

Belladonna Embrocation.

F. XLIX.

Take of—

Extract of belladonna	1 ounce.
Vaseline	4 ounces.

Rub well together. *Useful to paint over inflammatory swellings, to disperse them and prevent matter forming. Applied freely and persistently all round the quarters of the udder, it checks and prevents the secretion of milk.*

Carron Oil.

F. L.

Take of—

Freshly made lime water Olive, or raw linseed oil	equal quantities.

Shake well together till thoroughly mixed. *Used for burns and scalds laved thickly upon the parts, and the whole covered with cotton wool.* It must be changed frequently if much matter forms.

Resolvent Embrocation.

F. LI.

Take of—

Strong mercurial ointment	1 ounce.
Oil of origanum	½ ounce.
Camphor	1 ounce.
Olive oil	4 ounces.

Dissolve the camphor in the olive oil, then rub down the mercury ointment in the camphorated oil, and add the oil of origanum. *Useful in dispersing thickenings of the limbs, &c., left by inflammations.*

Ringworm Embrocation.

F. LII.

Take of—

Sulphurous acid . . . . . } equal parts by measure.
Glycerine . . . . . }

Mix well together. *A certain cure for ringworm, painted on with a brush frequently.*

Notice.—The amateur must take care not to mistake the above acid for sulphuric acid. Sulphurous acid smells strongly, but does not taste "sharp."

LOTIONS.

Anodyne Lotion.

F. LIII.

Take of—

Batley's solution of opium . . . . . 1 ounce.
Barley water . . . . . 1 pint.

Mix, and apply as a soothing lotion. *Useful as an injection in vaginitis. A small sponge charged with it may be carried in the hand into the uterus of the mare, cow, or sheep, when that organ has been replaced after being inverted.*

Black Lotion.

F. LIV.

Take of—

Calomel . . . . . 1 dram.
Fresh lime water . . . . . 20 ounces.

Shake well together. *Useful as a corrective in certain forms of ulcers.*

Astringent Stimulating Lotion.

F. LV.

Take of—

Powdered sulphate of zinc . . . . . 1 dram.
Distilled water . . . . . 10 ounces.

Mix. *Useful in all ulcers which require stimulating, or their discharge moderating.*

Astringent Sedative Lotion.

F. LVI.

Take of—

Goulard water	2 ounces.
Batley's solution of opium	1 ounce.
Distilled water	20 ounces.

Mix. *Invaluable in the early stages of inflammation of any part, used alternately with hot fomentations.* A little should be poured into a cup standing in very hot water, and when warm applied with a piece of linen rag—the rag spread over the part and wetted the moment it becomes dry.

Refrigerating Lotion.

F. LVII.

Take of—

Acetic acid	2 ounces.
Ether	1 ounce.
Distilled water	17 ounces.

Mix. One or two folds of linen are to be spread over the inflamed parts, and kept *constantly* wetted with this lotion. *Useful in fresh sprains, bruises, &c., and all inflammations on or near the surface, to reduce excessive heat, and thus moderate destructive inflammatory action.*

Soda Lotion.

F. LVIII.

Take of—

Bicarbonate of soda	1 ounce.
Scheele's Prussic acid	2 drams.
Water	19 ounces.

Mix, and label it "poison." *A highly useful lotion to allay itching, the smart from stings of insects, &c.*

UNGUENTS OR OINTMENTS.

F. LIX. Strong mercurial ointment.

The author thinks it unnecessary to give the formula for

this ointment, as all chemists keep it ready made, according to the directions of the British Pharmacopœia.

Hair Ointment.

F. LX.

Take of—

Strong mercurial ointment	½ ounce.
Castor oil	2 ounces.
Oil of origanum	½ ounce.
Cacao butter	3 ounces.

Melt the butter, and then rub all down together in a mortar that has been well warmed. A gentle stimulant to the skin where the hair bulbs have been weakened by injury, or by inflammation, or its products.

Stavesacre Ointment.

F. LXI.

Take of—

Powdered stavesacre seeds	6 ounces.
Oil of origanum	2 ounces.
Cacao butter	12 ounces.

Melt the stavesacre and butter over a half-cold fire—heat only being desirable to keep the butter just liquid and no more—constantly stirring them for two hours; pour into a bowl, and stir in the origanum when nearly cold. *Useful in destroying parasites anywhere upon the skin; therefore useful in mange, lousiness, &c.* It should be well rubbed into the parts affected every night, and the parts cleansed the morning following with washing soda and hot water.

Sulphur Ointment.

F. LXII.

Take of—

Sublimed sulphur	2 ounces.
Carbonate of potash	1 ounce.
Oil of rosemary	4 drams.
Lard, free from salt	13 ounces.

Rub up all together in a mortar, or mix them with a broad

knife. *Useful in mange and acne.* To be rubbed well into the affected parts every night, and washed off thoroughly in the morning by washing soda and hot water.

Styptics.

F. LXIII. Styptic colloid.

The author recommends all horsemen to keep some of this by them. It is sold by most chemists. *Useful in wounds, &c., &c.*

NOTICE.

The medicines throughout the Formulæ are those of the British Pharmacopœia (B. P.), a copy of which is kept by all chemists.

WEIGHTS AND MEASURES.

SOLIDS.

20 grains	1 scruple.
3 scruples	1 dram.
8 drams	1 ounce.
16 ounces	1 pound.

FLUIDS.

60 minims* (drops)	1 dram.
8 drams	1 ounce.
20 ounces	1 pint.

* The size of drops depends largely on the size of bottle neck from which they are dropped; therefore, minim and drop are not quite the same thing.

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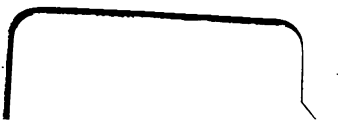
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